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MEDICAL GYNECOLOGY

A TREATISE ON THE DISEASES OF WOMEN FROM THE STANDPOINT OF THE PHYSICIAN

BY

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PREFACE.

The growth of gynecology in recent times has been phenomenal, especially in the direction of surgery. That in this respect its progress should have been remarkable is not surprising, in view of the great advances made in general surgical knowledge during that period.

It appears in medical literature that surgery has been more assiduously cultivated than medicine. This may have induced some to push the surgical treatment of diseases of women to extremes, and in some degree to neglect medicine. On the other hand, physicians, who have been overconfident in their art, may have failed occasionally to do surgery full justice. This is evidently responsible for the frequent and often illogical discussions which have been going on in the past few years regarding so-called radical and conservative practice in gynecology.

The science and art of medicine and surgery in their highest development should be above all party questions, and those who place a just estimate on both branches of the healing art, and employ them without predilection and prejudice, are the most successful and reliable. Unreasonable devotion to either medicine or surgery is wrong.

A consciousness on the part of the author of this status of gynecology is responsible for the inception and genesis of this work. How far he may be right in thinking that there is room for a new work on the medical branch of gynecology, and to what extent the requirements have been met in this volume, the members of the medical profession alone can decide.

The popularity of the author's contributions to gynecological surgery in the past raises the hope that this work may meet with an equally favorable reception.

The volume is arranged in three parts:

Part I. deals with the primary differentiation of sex, development and growth during early life, and the conditions favorable to the evolution of normal organization and the attainment of a healthful puberty. This involves the discussion of heredity and environment, including care in childhood, mental and physical education and culture, together with the necessary attentions during the transition from girlhood to womanhood.

Part II. treats of the characteristics of sex, the adaptation of structure to function, the predisposition to particular diseases, and the causes of certain affections peculiar to women. Then follow all the functional and organic diseases common to the period of active functional life of woman which naturally come under the observation and care of the physician.

Part III. discusses the menopause, or the transition from active functional life toward advanced years, and then the diseases of the latter period.

The great object in the first part of this work is to consider as fully as possible the ways and means of developing vigorous organizations and maintaining healthy functional life. This necessitates attention to hygiene at all periods of life, and all that the term implies.

In discussing the treatment of diseases the author has endeavored to define, as clearly as possible, the boundary lines between medicine and surgery, and their capabilities, so that each may be thoroughly understood and employed for the relief of suffering and the saving of life.

THE AUTHOR.

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MEDICAL GYNECOLOGY.

PART I.

CHAPTER I.

PRIMARY DIFFERENTIATION OF SEX.

THE union, *in utero*, of paternal and maternal cells forms the germ of the future being. There are elements from which the general organization is formed, and those which are detailed to form the organs of reproduction.

Each germ contains two sets of elements—the one endowed with the power to evolve a human being and designed from the first for that purpose, the other destined to develop the organs for future reproduction.

The germ of the embryo is said to contain the elements of both sexes, but almost immediately a sex is determined by certain factors assuming prominence and activity, while others remain stationary, finally to undergo atrophy.

Primary differentiation of sex is guided by the condition of the parents at the time of generation and the nature of the germ.

As animate things naturally assume the characteristics of the seed from whence they spring, the primary differentiation of sex is influenced by heredity, which, in fact, is in force to the highest degree during the development of sex, and is the chief factor in causing the *primary characteristics of sex*—i. e., the sexual organs. At birth the primary differentiation of sex is completed, or nearly so, and thus far the process is under the law of heredity.

Not only is the specific object of these organs indicated, but the ultimate sexuality is in all respects advancing to completion.

At birth the sexual organs of the female child are formed, and, with the exception of the uterus, have attained their characteristic shape and outline, but they are, of course, immature in size. The general organization has, too, certain indications of sex, although these are not well marked.

Sexual differences become more apparent as the animal rises in the zoölogical scale, and in the human race the reproductive organs are the last to complete their development. It is not until general bodily perfection is nearly attained that the sexual organs undergo *secondary* development. It is now that the general sexual characteristics of the body and mind are shown in the mysterious transformation which occurs at this period of life.

At puberty the organism, then complete, is capable of reproduction, one of the chief offices of living beings. From birth until puberty all functions save the sexual are identical in kind, if not in degree, with those performed during the time of reproductive life. When the time called puberty arrives the complex series of events denominated sexual make themselves manifest, usually in a well-recognized way, and it is then that the organs of the general system and the sexual system, though anatomically different, become functionally correlated. The functions of ovulation and menstruation are assumed. It is during the period of development that the physician has the best opportunity to render his most valuable services to the race, therefore it is in order here to consider all questions pertaining to the management of girls from childhood to puberty.

HYGIENE, CLOTHING, FOOD, AND ENVIRONMENT DURING EARLY LIFE.

A most important and much neglected subject bearing upon this time of woman's life is that concerning her food, clothing, exercise, education, and environment generally.

To begin life well one must be born of parents who are sound in body and mind. They need not be educated, according to the popular meaning of that term. Size and vigor of brain and body are transmitted according to purely physical laws. The children of well-developed, healthy parents who may have but a limited school education often possess great mental ability, while, on the other hand, the children of great geniuses are often stupid. The brains of great men and women are often ruined by their excessive and ill-directed labor, and their children inherit this wreckage, not the original excellence. So, also, the athlete may injure his body and transmit his broken health to his children. It is not what people have been, or what they hope to be, but what they are at the time they generate, that is transmitted to their progeny. The characteristics of parents come down to their children under laws beyond control of the will.

Medical science is, to some extent, powerless in the face of heredity. Because of imperfect mental and physical health, certain men and women are unfit to procreate; but the advice of the physician is seldom asked for on this subject, nor is it always accepted when offered.

Science demands that none but the healthy should have offspring; but the social state ignores the demand. The laws which protect the lives and property of the present generation can only be operative for the interest of future generations; so the best that can be done is to improve and keep in health those who are to be the parents of the coming generation.

And the multitudinous nineteenth-century resources and devices—alimentation, physical culture, change in climate, in nurses, in the possession and constant following of the physician's directions in all the undertakings of physical and mental life—often seem to me pretty nearly equal in final results to healthy parentage.

After birth and throughout childhood the influence of parents may tend to make children like themselves, or to make them better or worse than themselves, according to the kind of care and culture bestowed.

Food is the primary necessity in raising children; the character, quantity, and time of administration should each have the scrupulous attention of all those who are responsible for the welfare of children. There is only one reliable source of supply for an infant. It is the first "food for infants" used, and it has not yet been equaled by any other. It is, indeed, a sad sight to see a helpless infant cut off from the maternal supply of food and forced to depend upon stuff manufactured by those guided in their work by a formula they do not understand and hence can not imitate. If a mother, by any misfortune or physical defect, is unable to care for her own young, a nurse should, if possible, be provided. It is a great misfortune to begin life with artificial food. The poor usually do right by their infants so far as feeding them for the first year is concerned; but in this country the rich are often derelict in this respect. It is a fact that a great many wealthy mothers can not nurse their own children. Dr. George M. Beard, who had much of the real scientist in him, once asked me what proportion of educated women of the better class were able to nurse their children. I could not tell him then, but I have since made observations which show that the proportion is small—far smaller than it should be; smaller than among the poor, who are in less favorable circumstances. Many there are who are too weak to perform that most important of duties; some there are who will not.

It is essential to have the maternal affection well developed. The hand seldom errs, either in controlling or caressing, when guided by pure and intelligent affection. Still, affection not under the guidance of reason and intelligence often leads to grave mismanagement. Love for children, with a clear appreciation of one's duty toward them, and knowledge of the methods of caring for them, are all necessary to success.

The love of children should not be so blind and all-absorbing as to exclude justice and common sense. This leads to unwise indulgence, which is ruinous. The want of love for

children leads to neglect, with consequences which, though differing from overindulgence, are equally unfavorable. The lower animals care for their young in a most rational and effective manner. They protect them with wonderful sagacity, but do not spoil them with overindulgence. They feed them in accordance with the most approved fare, guard them from danger, teach them all they have to impart, and bring them to maturity well prepared for the life they have before them. Here is to be found in a humble way the most perfect example of caring for the young. The whole process is conducted upon a plane far below that of the human family, but it is perfect as far as it goes. The highest illustration of the proper care of children is to be found in parents who have a full share of love for children which gives interest, and also a clear comprehension of how to manage them, both with regard to what they need and how to bestow it. The two extremes may be called the upper and lower boundaries of the proper training of the young. Between these all kinds of imperfections and blunderings are to be found.

In all this training and education the mother is the chief actor. Nearly all the duties devolve upon her. The father can help by his counsel and support, and when boys are nearing manhood he can help them, and from that time onward, but this is about all he can do. Occasionally a mother is found so inefficient that the father must needs take the larger share in caring for the children ; but he usually makes poor work of it.

Overdevotion to children on the part of the mother is to be carefully guarded against. Though in a given case the children are not injured, but fortunately and wisely cared for by all this observing care, still no mother should give her whole life to her children unless she is left alone with them. In the complete household there are others who require her care and attention besides the young autocrats of the home circle.

The quantity of food given should be limited only by the wants of the child. When a child is in health the appetite is

the best guide in feeding it, so far as regards quantity. Sins without number have been committed in scrimping the diet of girls in order to make them delicate, believing that to be sickly and helpless is to be ladylike. Strange it is that some women who talk the loudest about woman's rights deny their own girls (I should say girl, as they usually have but one) the right to eat enough to satisfy hunger. Children seldom overeat unless the wicked habit of making too long an interval between meals is established. Dr. A. Jacobi says children not only eat to live, but eat to grow also.

Nutritive changes in childhood are so rapid and the demands so frequent that the quantity of food required is relatively greater than in adult life; hence children should be fed at regular and rather frequent intervals.

Want of attention to this induces the bad habit of eating scraps between meals. If the time is not too long, children seldom ask for food in the intervals. These general statements suffice for all healthy children, and therefore special care is necessary only when in given cases there is some apparent malnutrition. When any derangement occurs in the primary processes of nutrition it is usually manifested by loss of appetite or irregularity and capriciousness in the desire for food. On the other hand, when the secondary processes—i. e., assimilation (or the appropriation of nutriment by the tissues of the body) and metabolism—are deranged, the result will appear in the character of the tissues. Examples of this are seen in children that are fat and pale-faced. They are often regarded as pictures of health by the laity, while to the physician they are simply evidences of malassimilation. Their food literally runs to fat in place of bone, nerve, and muscle. The object, then, should be, when catering for the one class, to find food that agrees with the stomach, which really means food which that particular stomach can digest. In the other class that food should be used which gives the kind of tissue most needed. In all cases it is safe to employ an abundant supply which includes both animal and vegetable food, and the variety should only be limited by the exclusion of articles

which are known to be unwholesome. Finally, girls and boys should eat at the same table and fare alike. The differentiation of sex which is observed at birth should remain elementary until toward puberty, so that during childhood the nutrition of both sexes should be the same. But the food and feeding of girls about the time of puberty is a subject of much magnitude. I presuppose the fact that the general principles of dieting are known, and I shall specially consider the subject in reference to the physical culture of girls.

In the first place, I am perfectly satisfied that a mixed diet is necessary to all, that is, it should include animal and vegetable articles of food, and in quantity sufficient to satisfy the wants. There is, of course, much difference in the kind of food required by each girl. One who is healthy, actively occupied, and growing requires as much food as an adult; many seem to want even more. They should partake of at least three good meals a day and have ample time for mastication and insalivation as well as for subsequent digestion.

It frequently happens that it is beneficial for girls to eat oftener than thrice a day, the amount in such cases being less than if the regulation number of meals were taken.

Too little attention is given in this country to the subject of food and feeding.

Eating should become an essential and pleasant duty, to be at all times enjoyed—first a duty, and then an agreeable and pleasant pastime. A young growing girl who does not enjoy her breakfast is not at all likely to enjoy her school work; indeed, a girl should not be permitted to go to school if she has not eaten a good and sufficient breakfast. If an engineer and his locomotive should come up and report for duty in the morning without a tender, both would be sent back as unfit for the work before them. The same should apply exactly to schoolgirls. A good, nutritious, easily digested lunch should be eaten by all schoolgirls. While ambitious scholars may struggle along without proper food for a time, they are sure to break down in time. Another error is hurried eating; this impairs the appetite and causes it to

flag. Too highly seasoned food will develop a morbid appetite, and eating such should be forbidden before digestion is completely ruined.

The question here arises as to what should be given to drink. Certainly in this country there is too much water drinking, and the unwise custom of partaking of tea, coffee, wine, mineral waters, and fancy drinks known under the generic term of soda water. This climate with its extreme summer heat is, no doubt, largely responsible for this unfortunate habit, but deranged digestion from improper feeding is also an important cause. It may be laid down as a rule that the great American drink—iced water—should not be indulged in immediately before, during, or immediately after meals. If thirst demands it, a little iced water may be slowly taken from an hour to half an hour before meals, or time enough to allow the stomach to fully recover from the chilling process, and it should not be taken again until long enough after meals to allow gastric digestion to be pretty nearly completed. Warm drinks are less objectionable, and that raises the question as to whether children should be allowed tea, coffee, cocoa, and the like. I believe that any of these may be given in small quantity when largely diluted and made agreeable. I believe it is the best way of supplying the fluid necessary to insure digestion. This, I think, is particularly essential at breakfast time in this trying climate. For luncheon at school, tea and coffee may be withheld, and the necessary fluid supplied in the form of soup or bouillon. At the evening meal most children do better without either tea or coffee; but if a natural thirst—one not acquired by habit—demands drink, pure water, Apollinaris, Hygeia, or some of the table waters that are known to be pure may be indulged in.

All that has been said on this subject applies to the healthy, strong, well-balanced organization—to those who by reason of good health are capable of digesting wholesome food and who do not require any special kind of diet because of some defect in their health or general organization.

We now come to the most important part of this subject, and that is the management of unhealthy girls. And first of all, because most frequently seen in this country, is the spare, nervous girl with a capricious appetite—one who seldom if ever has a good appetite for breakfast. At times such a one will eat enough, perhaps more than seems necessary, while again she declines all food. With such it is very necessary that they should have perhaps a still greater variety, always keeping within the bounds of wholesome food, and yet such, as it were, that invites them to eat. They certainly are benefited by partaking of some warm drink, like weak tea or coffee, the first thing in the morning.

I have found very weak coffee with a little lemon juice and sugar to provoke an appetite for breakfast in very delicate individuals, and to take away the desire for drinking more coffee or anything else after eating. Should this fail to induce an appetite, let them drink a cup of good cocoa; this is nutritious and disliked by few.

If they can partake of solid food, warm milk, eggs, and oatmeal with cream and sugar form an excellent breakfast. At times a small piece of bacon or smoked beef, well cooked and presented in a delicate way, acts as an appetizer. Should any or all of these succeed in whetting the appetite, there must nevertheless be an alternation of them from time to time, for the appetite is a nervous function and soon grows intolerant of routine.

I exclude from the diet of this class of cases hot bread, cakes, fried potatoes, sausages, and salt fish, except carefully prepared codfish balls.

It is a mooted question how much animal food girls of this temperament should partake of. Once a day is often enough, I believe.

Sweets—ice-cream and sweet desserts—are both enjoyable and profitable in these cases; but pastry never. And I believe that food denominated "fatty" can be taken with advantage.

I have been describing the *modus vivendi* of that tempera-

ment which modern science aptly calls "*sensitif*," or "*sensitif-actif*"—temperaments (formerly nervous) whose fancy, imagination, introspection, ambition, strong passions, and excessive sensibilities, with marked physical activity (nervous strength), are the prominent features.

The phlegmatic type of former years we now know as "*apathique*"—heavy, stolid, slow, sleepy, lazy—yet, strange to say, with at times such characteristics of the "*sensitif*" class that we may well call them "*sensitif-apathique.*"

These girls require a very different diet. They should have very little farinaceous food, very little sugar, but a sufficient supply of lean meat, brown bread, oatmeal, fruit, and the less starchy vegetables. Barley flour, which contains less starch than the average farinaceous articles of food, is of the greatest advantage to them, and can be cooked in a variety of ways, both agreeable and beneficial. A limited supply of fluids should be partaken of, whereas girls of the *sensitif* (nervous) type should be encouraged to the ingestion of larger quantities.

Pure air is high on the list of those conditions that may be called essential elements of growth, development, and health. This all-important factor in life and the maintenance of health, a constant supply of which we all know is mandatory, is, at least in large cities, nearly always contaminated, and yet with a little attention much of the bad air which we are obliged to breathe, as things now are, may be avoided. As our houses are built (and schoolhouses are included), the air is often very contaminated, and it is impossible, by any effort on the part of the housekeeper or teacher, to have it at all times what it should be. Great attention, however, should be given to this, and, if it is impossible to secure the requisite supply of fresh air in school, children should be kept in the open air the larger portion of their time. The sleeping rooms of growing girls can nearly always be ventilated; and if a little attention is given to selecting schools, much can be done, and with the additional advantage, that as soon as the teachers, especially of the private and higher schools, know that the parents

and guardians insist on good ventilation, they will make efforts to secure it.

Parlors and sitting rooms should in winter be carefully ventilated, or children and young girls should be kept out of them. My idea is that after each recitation of an hour in school the children should go out for a five or ten minutes' run. More out-of-door life is necessary, and none the less so because our climate seems against it.

In connection with the subject of pure air it is, of course, needless to say that the plumbing should be perfect in all buildings.

Predisposition to disease is often transmitted, but also arises from malenvironment in early life. Impure air is said to predispose to phthisis by preventing development of lung tissue, thus giving the bacilli of tubercle a fair field to act in.

Chlorosis is in part induced by impure air and inaction of the respiratory organs in early life. And since chlorotics are prone to degenerative diseases and cancer, the effects of impure air are often far-reaching in their evil influence.

While in adult life the results of breathing impure air are visible and immediate, such is not the case to the same extent in youth. But the results are just as bad and more lasting.

Clothing has for its object the securing, as far as possible, of warmth—an equable temperature—to the body. While it is a protection, it should never retard motion. Clothing should be equally distributed over the body, and there is no reason why the chest and abdomen of a child should be covered thickly and with finery while the arms and legs are as bare as a savage's. During the transition from girlhood to womanhood marked attention is necessary, with special reference to the characteristics and peculiarities of sex. I may allude here to certain respects in which errors are most likely to occur in regard to clothing. At the present time, and probably in the past, fashion seems to be based upon capricious ideas. While it should be governed entirely by the laws of adornment, which play an important part in sexual selection

of the female, it is in reality governed by perverted ideas of what is supposed to be beautiful and attractive. About the time when this transition takes place the usual custom is to increase the weight of skirts and to use corsets, intending thereby to beautify. This would be all perfectly right if it did not interfere with health. There is that in the mental condition of girls and mothers which prompts them to seek the robes of maturity, but it is contrary to hygiene to add additional weight to the skirts and to induce severe constriction at the waist by tight clothing, which is usually employed at this period of life. Corsets—the subject of condemnation by all reformers in dress—are still worn by women, and it is possible that they ever will be. Their persistent use has led me to study the subject. I have come to the conclusion that this injurious article of the wardrobe is not so very bad in itself. Corsets, if properly made and worn as they ought to be, are as harmless as any portion of clothing usually worn. It is the abuse of the article that we condemn. The corset has been so long worn that there is a demand established for it, and the mammary glands of civilized women require support because the deep fascia—the natural support of these glands—is imperfectly developed, and has been so for many generations, this imperfection having been transmitted from mother to daughter through heredity. The resulting pendulous state of the breasts therefore requires artificial support, and this is best supplied by well-fitting corsets. This has been overlooked by those who would institute immediate reform, entirely abandoning this article of clothing. It would take several generations to cultivate a form and figure that would admit the disuse of corsets in mature womanhood. Take the women of our own time as they are, and it will be found that they are more comfortable and just as healthy with the proper use of corsets. The absurd and cruel habit of lacing corsets need not be alluded to, except to say that there is this great danger not generally known even to those who desire to dress rationally: that the waist will contract under very slight but long-continued pressure. The corset

that is only snug to-day will be loose a week hence. The same harm can be done by wearing a tight waist. Great care should therefore be exercised in keeping corsets loose, especially in young growing women. I have also thought that if some elastic material could be introduced into the mechanism of the corset which would permit every motion of the body, at the same time giving required support to the mammary glands and to the skirts, it would be an improvement; in fact, I believe such a corset is now obtainable.

I do not find it possible to separate the discussion of the harm done by corset wearing about the time of puberty and that occurring to the mature woman in the active period of her life.

Tight corsets induce costal respiration, and our anatomies and physiologies calmly tell us that this is the feminine type. But a woman whose waist is nonconstricted will breathe like a healthy man.

The pelvic circulation is greatly dependent upon the free movement of the diaphragm; hence anything tight about the lower ribs works positive harm to the sexual organs.

This is scarcely the place to adduce all the displacements of uterus, liver, stomach, kidneys, or intestines that are recorded and described as direct results of tight lacing from corsets, straps, or belts. To the anatomist they form a chamber of horrors.

The outline of woman is rendered inartistic and sometimes monstrous. The thoracic cavity and the abdominal cavity attain shapes most disadvantageous to health, beauty, function, or life.

Women who lace rather tightly have a protuberant abdomen projecting beyond the vertical line of the bust; this is physiologically and artistically bad.

Pressure around the waist tends to develop a thick layer of adipose tissue in the abdominal wall below it; hence the very woman who does not want *a high stomach* induces one.

Constrictions around the waist bulge downward the pelvic floor, the result of the unyielding, unnatural wall above it.

Dr. R. L. Dickenson found prolapsus uteri in *every case* where there was evidence of tight lacing. Of course the prolapsus was not always extensive; but what a percentage! Anteflexion, retroversion—perhaps every variety of uterine malposition—have over and over again been induced by waist constriction.

Perhaps no organ is influenced more by waist constriction than the one that contains one quarter of all the blood in the body; and when we recollect that at the important time of puberty this great organ may weigh *twice as much*—in proportion to the body weight—as in the middle of woman's active life, the immense damage of tight lacing in girlhood can be estimated by any one.

The great writers on the liver (Frerichs and Murchison) describe the diseases and displacements arising from tight pressure about the liver region.

The position of the stomach may be so changed—and that of the pancreas with it—that dyspepsia may appear early in life, to remain incurable and permanent. I shall soon refer to physical culture in women, and it only remains to be said that free movement, free breathing, and all capacity for good, moderate exercise out of doors or in a gymnasium, are impossible with even moderate tight lacing.

So much of good development depends on easy and free locomotion that the greatest attention must be paid to the fit and flexibility of the shoes. It is only during the forming stage of life that bodily perfection may be obtained. After maturity, should a woman enjoy squeezing her feet she is free to do so; but children should have shoes to protect, not to deform their feet. High heels have spoiled the utility and beauty of thousands of limbs otherwise beautiful and natural.

After the matter of clothing comes the next most important hygienic measure, and that is that more time should be given to rest and healthful physical exercise, so that the additional tax added to the nutritive system of developing the sexual organs should be obtained. Too long confinement in the sitting and stooping position in school, standing in an

awkward position during the recitations, extra hours of study out of school time at home, in which the same unfavorable attitudes to development and growth are maintained, should be most carefully avoided during this transition period in the development.

Dr. Mosher * gave the results of extensive and careful observations in regard to asymmetry of the body produced during girlhood by unnatural positions in sitting and standing at home and in school. She pointed out well-marked irregularities of the face, showing the deviation of the nose to one side, want of symmetry between the eyes and the angles of the mouth, and a corresponding deformity was noticed in the pelvic organs, the uterus inclining a little to one side of the pelvis, that side to which it inclined being determined by the habitual attitude of the girl in standing or sitting. These deviations, while slight in the great majority of cases, were in others exceedingly well marked.

Since my attention was directed to this through Dr. Mosher I have satisfied myself by observation that these deviations from symmetrical formation are most likely to be brought about during the two years preceding puberty, though no doubt they are begun earlier in life. These points that I have simply hinted at will be referred to again while considering the irregularities of development specially manifested in the sexual organs, and due largely to irrational education and deranged conditions of early life.

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* Paper read before the Kings County Medical Society.

CHAPTER II.

SECONDARY DIFFERENTIATION OF SEX AT PUBERTY.

THE physical and mental characteristics of sex evolved at this period of secondary development will be discussed farther on in the chapter devoted to the anatomical and physiological peculiarities of women. In this connection attention will be confined to the influences and conditions which effect this stage of development, and the special care and attention necessary at puberty.

The influence of the reproductive system in guiding the development of the being toward certain attainments peculiar to the sex doubtless begins during embryonic life, but it is when puberty comes that the effect is most apparent; and secondary characteristics of sex result from many influences, the chief of which is the existence of the sexual organs and their relation to the general organization.

Since heredity and environment are also potent factors, physical and mental culture should appeal to them to find conditions necessary to attain normal development, and the therapeutic management of malformations, deranged functions, and many of the diseases of women should be directed by light from the same source.

During early youth, probably until the twelfth year, the characteristics of the female sex are gradually evolved under the influence of the sexual organs. This is assumed first upon the negative evidence obtained from the fact that there is nothing yet discovered in the structure and functions of the general system of the two sexes to produce the differentiating characteristics of sex. The mental and physical pe-

culiarities of sex appear in early life to a limited degree, while the sexual organs are still imperfectly developed and functionally inactive. It is toward puberty, when the organs are undergoing secondary development, that their influence is exercised in the highest degree. In fact, the reciprocal effects of the two systems upon each other are quite apparent at that time. If at puberty a girl is defective in her general structure, the sexual organs often fail to be perfectly formed; and even when the general system is well developed, should the sexual organs be defective, the whole organization is modified. A number of cases might be quoted to illustrate this point, but it is enough to say that when the sexual organs, especially the ovaries, are congenitally absent, the subject will fail to develop the attributes and general appearances of the female sex. In such cases the tendency is toward the masculine type of the species. One such person I have seen. She had the narrow pelvis, square shoulders, rudimentary mammary glands, full beard, and hairy body—in a word, the body of a male. Such subjects show, better than any discussion can, the effect which the sexual organs have upon the physical development of woman, and also that the tendency of development is toward the less complex organization of the species when freed from the influence of the sexual system. The question naturally arises whether the product of such a development is the result of the absence of sexual organs, or is due to some peculiarity of the whole organization which had its origin in some deviation from health in the germinal cell. This latter cause, of course, is possible but not very probable, because if the deviation from the normal female type were due to disease of the primary element or elements, deformity would be more likely to occur than a change from one normal type to another. Were it necessary to quote authorities to sustain this point a great many could be given.

One or two will suffice: Virchow states that all the specific properties of woman's body and mind, all her nutritive and nervous sensibilities, the delicacy and roundness of her figure,

and in fact all her womanly characteristics, depend upon her ovaries.

This expresses the opinion of the majority of those who think upon the subject, and I can see no other way by which such results could be obtained except through influences exerted during development.

The dependence of sexual dimorphism is well shown by Prof. Max Weber, of Amsterdam.* He presents the case of a chaffinch in which the left side of the body had the female coloration and the right that of the male bird, the middle line sharply defining them. The bird was a hermaphrodite with a well-developed ovary in that side of the body clothed in female plumage, and a testicle on the opposite side.

Dr. Bertkan† describes an insect with the coloration of the wings male on one side and female on the other. Dissection of it showed degeneration of the sexual organs. The directing and ever-acting influence of the ovaries is thus shown to be exercised throughout the animal world; and when this activity manifests itself for the first time—when menstruation occurs—puberty is established.

Special attention must be given to the physical wants of girls at puberty. Much of the information regarding what they are to expect and how to protect themselves then must come from the mother or a cultivated woman of mature years and good judgment. Up to the time preceding the first menstruation a girl should be left in ignorance of her sexual organs and all that pertains to them. But when the important time arrives she should report to mother or governess the occurrence of the event; and even then many things need not be told until, later, she is to assume other and higher social relations.

At the first appearance of the flow the girl must be protected from sudden changes of temperature, exposure to cold or to exhausting heat, sea voyages, change in climate (save from an unfavorable to a favorable spot), extreme nervous

* Proceedings of the Zoölogical Society, 1873, p. 241.
† Archiv für Naturgeschichte, iv, p. 75.

excitement (either pleasant or unpleasant), extreme muscular exertion, exposure to contagion of any sort, and from any indiscretion in diet that could eventuate in indigestion.

The overfed, sluggish girl, raised among great comforts—she who belongs to the class of *apathiques*—should exercise; but the bookworm—the *sensitif*—should go to the fields for fresh air, sunlight, and mild exercise. An overworked girl who is an *actif* in temperament needs rest especially.

Disregard at puberty of these rules is capable of arresting the evolution of the sexual organs, deranging their functions and impairing their future health and usefulness.

When girls arrive at the time when general development is near completion it is absolutely necessary that the reproductive organs should take up their functions promptly and perfectly. According to the observations of Dr. Emmet, more than half of all women who at puberty suffered from menstrual derangements are sterile and delicate in after-life. This shows how important it is to begin right. My own observations show that the vast majority of incurable diseases peculiar to women originate in imperfect development and the consequent derangement of function. The best organizations possess greatest power to resist, and although they are still liable to diseases and accidents, they possess a strong tendency to recuperate and respond more promptly to the care of the physician and surgeon than those who begin wrong.

The physical conditions necessary to meet the demands of the reproductive system, are the conditions which, in their integrity, are best adapted not only to maintain health, but also to resist the causes of disease, whether they are intrinsic, extrinsic, or reflex.

PHYSICAL CULTURE.

The most important function of the physician relates to the development of the young and growing, and to the prevention of disease. I therefore consider that a work on

hygiene and therapeutics would lack an important feature if this subject were not discussed.

Much has been said and written, but without much foundation and fact, about the delicate health of American women. The statement that there is an apparent degeneration of the women in this country is founded on no better basis than that some women and girls of this country are in ill health, but delicate and sickly people are found everywhere. Were we to measure health and strength by mental and physical labor accomplished, the women of America would compare very favorably with those of other lands. It must be conceded, however, that much of the suffering and sickness which prevails at the present time might be prevented if more intelligent care were given to the physical culture and development of the young. This subject includes all that relates to the development and hygiene of body and mind; but I shall limit my remarks in this connection more especially to that which relates to physical culture generally. The great object is to develop the whole body evenly and consistently, with a view of adaptation to the requirements of mature life. Those who have given most attention to physical culture, whose opinions and judgment are most fully in harmony with the facts observed in the practice of medicine, inform us that the conditions and training which best develop the general organization are most favorable to the development of the brain and nervous system and of the sexual system also.

Imperfect development arises in many ways. In one large class there are many defects of organization and consequent imperfect functions and ill health which come from the neglect or want of any systematic physical education. The poorer classes are by misfortune compelled to violate all or most of the rules of hygiene, and they lack wholly physical culture. Unfortunately, it also happens that those who are so circumstanced as to possess the means to obtain all required education and culture suffer because of uneven development. This simply means that one portion of the organization is developed at the expense of the other, and hence we find those

who are weak in certain directions while they may be comparatively strong in others. There is that lack of harmony which characterizes a perfect development in which the whole body, brain included, is adapted to the requirements or duties of the individual.

It is a well-established fact that a full development not only of the nutritive and nervous systems, but also of the sexual organs, is necessary to the fulfillment of the functions, and consequently to the general mental and physical well-being of women. The hygiene of the reproductive organs during girlhood is not alone sufficient, because these organs depend upon the nutritive system for nearly all the conditions of their growth, development, and maintenance, and hence the highest organic perfection of the sex can only be obtained indirectly through the general system. It follows, therefore, that a perfect system of general physical culture and hygiene will cover the ground pertaining to physical culture and care during early life. It would be beyond the capacity of this work to give here the general laws of hygiene so far as they are known and taught. They are to a great extent alike adapted to the young of both sexes. It will suffice to state that all those conditions which secure the highest type of physical womanhood are also most favorable to the development of the peculiarities of sex and the best system of hygiene and culture of the present day. There are rules sufficient for the care of girls, generally, but there are many fluctuating opinions among authorities regarding the laws of health as applied to the female sex in reference to some of the peculiarities of organization which should be here noted. Many of the defects come from mistaken views respecting what constitutes true culture. In the present state of society in this country too much time is devoted by one class to mental culture and too much by another to the struggle for existence. Nearly all our institutions of learning are devoted to mental training and moral culture, while there are no organized means of physical culture except gymnasiums, where excessive and spasmodic muscular exercise passes current

oftentimes as physical education. It seems as if the culture of the nervous and muscular systems comprised the whole subject of education.

There is another false principle which prevails to a great extent in those systems—namely, the application of one course to every variety of subjects. The precocious dyspeptic girl—the girl who belongs to the *sensitif* or *actif-sensitif* type—pursues the same course of training as the one who is mentally dull but physically vigorous—the *apathique* or *actif*. Now, as the object of all true culture is to secure, as far as possible in every way, the development of body and mind, it follows that the method employed should be adapted to the special qualities of each individual: in one the intellect requires most attention, while digestion and assimilation ought to be cultivated in another. In place of one general course for all, a custom prevailing to-day, there should be a special course for each, according to the requirements of her organization. As society is organized in the present age it is impossible to follow out this plan, but more and stronger efforts should be made toward improving and perfecting it. The medical profession could do much to disseminate needed information on the subject. The confidence which is inspired by the belief in the progress of medicine in the departments of hygiene and preventive medicine gives hope for more rational culture in the future. Physicians ought to be at all times ready to give advice to and prescribe for those who are undergoing physical culture and development, for here they can do more for the human race than at any other time of life, and the people are coming to know that it is wiser to employ a physician to superintend the physical education of girls than to employ him to cure their ill health during womanhood. We have said that the poor, especially in large cities, suffer from excessive indoor life, from the effects of imperfect food, and all other conditions which come from poverty and overcrowding, the consequence being that they are imperfectly developed generally. The children of the rich or well-to-do class, who have the advantages of means

but the disadvantages which come from the misuse of wealth, are, in this country at least, quite as liable to imperfect physical development as any, save the offspring of the very poor.

This is the class that should be mentally and physically the most perfect, for they have ample means to cultivate both body and mind. Yet the opportunity has not been improved. A cause here of defective development is the great disproportion between the time given to care of body and of mind.

Unnatural home culture and school education overstimulate the brain and nervous system; and, by creating mere excitability without force, arrest development and lay the foundation for ill health and failure in after-life. Parents and the other teachers seem to have but one idea, and that is to store the mind with knowledge and enforce good moral behavior. While the physician advises country life, rest for the brain, and care of the body for girls who rank high as scholars but are miserable in general health, the reply to his counsel often is that they will thereby neglect their education. They fail to see that a little knowledge gained at the expense of impaired development of body is worse than useless. A knowledge of mathematics and astronomy is of little value or comfort to a pale, bloodless girl who suffers from indigestion and backache. The undue amount of time spent in the house, in company, and at places of amusement, the variety of objects of interest which crowd around her while in the street—all tend to tax the brain and nervous system at the expense of the rest of the body. Lounging in easy-chairs at home and the strained sitting posture in school interrupt the return of the blood from the lower portion of the body. That keeps up an engorgement of the pelvic organs which retards their development and growth.

Girls are occasionally seen in this grade of society who inherit vigorous digestive organs and stolid brains, and are therefore little disturbed by the excitement of their artificial surroundings; such are typical *apathiques* in temperament. They become fat and indolent; the heart and blood-

vessels remain small because the circulatory system has little to do. The sexual organs are often imperfectly developed. These girls become bloodless, and often suffer in womanhood from menstrual derangements and sterility. Their abundance of flesh and their white skins give them an appearance of health which is unreal, and they are incapable of anything approaching the highest functional activity. Many of these peculiarities are inherited, but they can be overcome by proper training in early life.

Bodily defects in man are not due to original sin; the bad are often physically better than the good. Man has given more attention to the physical culture of the lower animals than to himself, hence the former's superiority.

To secure normal development of the reproductive organs is to secure a uniform, harmonious development of the whole organization.

True, it is possible to have a high degree of development and functional activity of one portion of the body while another may be markedly defective; but this is rather accidental and exceptional, and, when it does occur, the portion that is well developed will certainly be hampered, to some extent, in its function by the defects elsewhere present in the organization. The great object in culture, then, should be to devote the greatest care to that portion of the organization which is most deficient. The reverse of this is very often practiced in every-day life, as has already been stated. The strong, muscular girl is often permitted to exercise and neglect her lessons, while the delicate one with a large active brain is encouraged in her studies, because she is inclined that way, and is quick to learn. The result generally is to make the *sensitifs* more so and the *apathiques* still more stolid.

The best way to get at this proposed system of culture is through a study of the temperaments. It has been a habit among medical men to use the word temperament to designate a condition of the organization in which one or more portions or systems predominate—i. e., that are more highly

developed than the rest. The terms nervous, sanguine, motor or bilious, and lymphatic, are employed to indicate temperament as manifested by physical conditions. The *actif*, *sensitif*, and *apathique* terms are used to indicate the disposition or functional characteristics of the temperaments. When the brain and nervous system are better developed than the rest of the body, the person is said to have the nervous temperament. When the heart and blood-vessels are proportionately large, the function of blood-making active, and the hair light or inclined to red, the temperament is sanguine, when the fat-forming process predominates, phlegmatic or lymphatic. The girl of large bones and muscles, abundant dark hair, and spare habit is of the motor or bilious temperament.

In the *actif* and the *apathique* temperaments the digestive organs and assimilative functions predominate; such are usually good livers and have much fatty tissue.

In the highest type of development there is a well-balanced state in every part of the body; the temperaments are harmoniously blended, and we have an *actif-sensitif* or a *sensitif-actif*, the line between the two being thinner as the type nears the ideal. I believe the *sensitif-actif* to be the most desirable type for woman.

The girl with a highly developed nervous temperament is, say pseudo-scientists, best fitted for brain work, while the *actifs* and *apathiques* should do physical labor. The object of that theory is to make the best of the material on hand, but it does not tend to improve the race. The true principle of elevating and improving the human race is to equalize the temperaments, as far as possible, by such physical and mental culture, occupation, and position in society as are best adapted to the improvement of the defects of the body or mind. If this principle guides the culture of girls from infancy up to puberty, the sexual organs will become well developed in the great majority of cases. Most of our literature upon this subject is devoted to the care of girls at puberty — that is, during the transition from girlhood to

womanhood. But to insure a satisfactory transition at that time, the proper culture and care should begin at birth and continue not only up to puberty, but during the whole functional life of the sexual system.

HOME CULTURE.

The subject of home culture of the mind is far too great to be even outlined here. All that can be done will be to state some of the principles of mental culture which bear directly upon the question of sex. The chief object to be accomplished is to keep the emotions under the control of the will and judgment as far as possible. The tendencies of the sexual appetence when freed from the guidance of instinct is toward error and extravagance. Intelligence, then, is the only agency through which the emotions can be kept within legitimate bounds. To obtain the required adjustment between the intellectual and emotional in the mental composition necessitates the closest attention.

Self-control is one of the great lessons to be learned in early life. A parent should begin by forming in a child a strong will and a sound judgment. These lie at the very foundation of all culture. It renders childhood happier, and is the best preparation for life in womanhood. It lies at the foundation of the ability to accommodate one's self to circumstances. Many a woman goes through life uselessly struggling to make her surroundings conform to her desires, when, by accommodating herself to her environment, she could secure contentment and happiness. Indulgent parents may yield to every whim of their children, and thus train them to expect from others the same subservience in after-life, but the world refuses such concessions to individual demands. It is true that the free-born have certain inalienable rights which they ought to assert; but these are the common inheritance of the human family, and hence the portion of one should not be increased at the expense of another. The existence of such attributes implies that no one has a right, in the exercise of his own liberty, to disregard the liberty of

others. The girl who has had her own way in childhood will desire the same concession to her wishes throughout her life. The first step toward acquiring the power of accommodation to circumstances is to learn obedience to parents. Every child is dependent upon others not only for support and protection, but for such mental and moral training as will best prepare it for self-control and intelligent submission to circumstances and the laws of life. If these lessons are neglected in childhood, when they may be easily learned, experience will be a harsh teacher in after-life, and disease and misery will be the lot of her who learns only after an unequal and exhausting struggle that the world can not be molded to her will. She who has learned to limit her wants in life is, perhaps, more fortunate than she who can gratify her many desires.

Obedience to laws, whether those of parents or of Nature and society, is not necessarily slavish subjection. It only implies a knowledge of what we can do, what we can acquire, and what we can contentedly do without. Childhood is often made unhappy by desires and cravings which can not be satisfied, and no effort is made to teach the reason why indulgence can not be granted, and to show that contentment is possible without the gratification of every selfish wish. By proper control the nervous system is freed from one great source of irritation in youth, and is strengthened and developed in that direction which best prepares one for the realities of adult life. Much of the nervous irritation so often seen among women is due to useless desires which can not be gratified. Unreasonable indulgence begets selfishness, which develops self-consciousness. Self-consciousness is one of the most marked predisposing causes of nervous disorders. Every little disturbance of the mind or body is noted and cherished, and an impatient desire to be free from it is at once awakened. Selfishness seeks relief from every care, and if that is not promptly obtained useless fretfulness ensues. Nervous disorders grow and thrive by nursing, while patient submission and forgetfulness of self starve them out. Con-

stant introspection, which arises from selfishness, circumscribes the mind and general usefulness. With such persons no impression is strong or lasting unless it pertains to something of self. When the family teaching has established this state of mind, it can never be fully overcome in after-life. All efforts to enlarge the range of interest are generally futile. The mind dwells upon its own follies and vain desires, wrongs and injuries, real or fancied, and cherishes them with miserly care, which, sooner or later, leads to a fixed morbid state of mind.

To protect a child from itself and teach it how to find material for mental occupation outside of self is to lay the foundation for much mental health and happiness in after-life. The children so taught begin life under the best conditions of mental hygiene, and are likely to go on to higher development. They will continue to find objects of interest in the world, while selfishness early acquired can hardly ever be overcome. All efforts to forget self and find enjoyment in things around are often futile. Intelligent and willing obedience to immutable laws—i. e., the power of adaptation to inevitable circumstances—and the ability to find interest in things outside of self, are most easily taught in the home circle by parents. If these lessons are not inculcated in childhood, the result is a spoiled child, and that really means a human being spoiled for life. A girl so reared at home is constantly annoyed by her surroundings in after-life. When she leaves home as a bride she finds that others have claims which she ought to respect, but she is not prepared to do so. She reigned supreme at home and can not easily yield to the dictates of others. And she either becomes a discouraged good-for-nothing, or else enters upon a lifelong war with the world and all that is in it. Even her prayers to God are pleadings for blessings which she neither needs nor deserves, without a word of thanksgiving.

The family habits in America tend to premature development of the brain and nervous system. If pushed too far, the brain of the child never reaches either its normal dimensions

or mental strength in adult life. There is scarcely any childhood here. I well remember that the first thing which attracted my attention when I arrived in this country was the precocity of the children. The slow, reserved awkwardness to which I had been accustomed in Europe I did not observe among American children. They were all mentally mature beyond their years. There was not the same difference between the adults of Europe and America. A more careful study of the children has convinced me that their chief peculiarity is mental activity. They do not present evidence of greater size or strength of brain, but much greater excitability and activity. At home and in schools I did not find extraordinary capacity for long-continued application, nor any marked proficiency in specific branches of knowledge, but a great amount of general information, a readier application of knowledge acquired, and a facility of thought and action superior to that of children in some parts of Europe. There are, no doubt, many circumstances and conditions which give rise to this rapid development of the brain and nervous system in this country. Climate, the restless, ever-changing condition of society, the mixing of races, and all the stimuli which a new country naturally affords—all these have their influence upon the young. In this connection attention is directed to the home influences. Here children associate more with adults, and are led earlier to adopt their habits and modes of life. Children occupy the same rooms and sit at the same table with their parents. They are less left to themselves, in cities at least, and as adults rarely adapt themselves to children, the children are obliged to accommodate themselves to the ways of their elders. This, to a certain extent, is as it should be, but the restless activity of the American people, which gives too little time for social life, has its influence upon the young. Boys and girls soon learn the value of time, and, like their parents, make the most of it. Unconsciously they catch the spirit of the age and country, and are hurried along without being permitted to linger in the quiet, irresponsible, thoughtless period of childhood.

The value placed in America upon every human being is too high to permit any one to remain long in that state of mental evolution and growth which is best fitted to develop strength and brain. Any precocious specialization is dangerous, for no child or young girl can show *all* their aptitudes. The young American must work while his less energetic neighbor is permitted to grow. Too much time is spent in action and not enough in repose. Too much forced work and not enough of easy play, which really is natural occupation. This applies to cities, the worst places to develop strong children. The same misfortune, to a less extent, prevails in the country. People here are almost all striving to better their condition. By industry they hope to rise in the world, and they need the help of their children earlier and to a greater extent than among the fixed populations of older countries which remain more stationary. The poor children in every nation have to work, but their employment in old countries has more routine and is less exciting than ours; hence I presume that imperfect development is in Europe more frequently due to poor food than to overwork.

There is yet another great error of early training which prevails in all countries, but perhaps more in this than elsewhere—viz., the cultivation of the emotions out of proportion to the rest of the brain functions. To use the classification adopted in a former chapter, we find that the emotional, the *sensitif* temperament predominates among the girls of America. This, added to their intellectual activity, gives the characteristic brain organization of this country, and is a predisposing cause of nervous affections. The management of children which prevails here tends to produce these peculiarities. The prosperity of the majority of the people enables them to indulge their affection for their children, and that indulgence begets strong affection in their offspring. The delicate sensibilities of the children contrast agreeably with the rude, coarse dispositions of a less fortunate race. Still, those finer feelings in children are the products of a high but perhaps misdirected civilization, and sometimes unfit them to

sustain those struggles for existence which often fall to their lot in mature years. With us, hypersensitiveness often takes the place of the cold indifference of barbarians, but a wiser civilization would develop a nervous organization which would be controlled by the intellect; kindness and mercy would be guided by justice; benevolence and sympathy would go hand in hand with reason; while the cruel heartlessness of the savage and the supersensitiveness of the over-refined would be unknown.

The great object to be attained is to keep the emotional temperament under the influence and control of the moral and intellectual nature. This can be accomplished by wisdom in training during childhood. A great majority of parents, in affectionate fondling of their children, only teach them to love and be loved. It should ever be borne in mind that the most commendable attributes of head and heart, if developed to excess, give rise to evil, and should therefore be avoided.

MENTAL EDUCATION OF GIRLS AT PUBERTY.

Usefulness should lie at the foundation of a girl's education. It does not to-day; and, worse, many suffer bodily injury during their study time. My own record of cases shows many diseases dating from a girl's graduation from school, college, or academy.

A girl must be fitted to learn rather than taught sciences and classics. Housekeeping should form as important a subject as any now on the regulation lists.

Defects in our system of education are active causes of ill health.

The brain alone must not be exercised, the rest of the organization being left to itself. Each student should have an education just suited to herself, the weak part being braced and developed in body or mind.

However much or little education girls receive, her physical organization demands first attention; and remember, the

transition from girlhood to womanhood usually occurs at the height of school life.

In school a girl must never be taxed to the full extent of her capacity, and undue haste in accomplishing an education is deplorable. Now the work of five years is crowded into three. Headache, indigestion, and insomnia result. Shorter hours, less competition, more sleep, more out-of-door exercise, and more time at meals are all necessary in modern education.

I have learned from the experience of many histories to dread the name of *my graduation year*. I imagine a large part of the Englishwomen's good health is due to their acquiring less knowledge in school years.

I do *not* think that during puberty and menstruation a girl necessarily needs rest provided the scheme outlined above be followed. Moderate mental labor greatly aids health at all ages and in both sexes. "There is no satisfaction and content like that following work *done*." And after work comes play as the best exercise—free, unartificial play, not the regular exercise of a gymnasium or "trainer."

It is wrong to require as much mental energy from a girl in school as from a man in active business, yet this is daily done. The mind can early be stunted. A woman in the rural districts who has had time to grow bodily healthy has great capacity for mental exercise later on in life, and we may have a poet, author, or scientist. Another, who has enjoyed all the opportunities for high education in the best colleges and who graduates *cum laude*, is never heard of after. They were "trained too fine."

To fill a child's head with facts so full that there is no room for common sense or original thought is no education. It is best to teach how to acquire knowledge and to manage what is already known; they can work with the means obtained, later in life.

Education should aim to make *women* in all that the name implies. A knowledge of how to be attractive and agreeable is a power of great value to a woman, who wins by

charming and attracting those who are to guard and sustain her.

Music, art, and the modern languages are far more necessary to woman than man. And personal beauty and becoming dress are, I believe, too often to-day obliterated from the girl educator's calendar.

Of what avail is all scientific, linguistic, and philosophical knowledge to a girl if she knows not a duty of the home? No girl's education is worth much if she has not been taught how to take care of children. Whether she ever has any or not is unimportant compared to the acquisition of this part of an education.

To teach anatomy and physiology to young girls is baneful.

What a mistaken idea to direct children's attention to the structure of their bodies and to the functions of organs! Of course, all should, as early as possible, know how important —and why—it is to have good food and how to prepare it, a clean person, good and pure air, the relations between rest and sleep, exercise, and how and when to take it, and should, above all, be taught how to obtain these, and also the necessities of life. A full knowledge of hygiene, so far as it is related to one's requirements of life and health and to one's relations to the world around, should be included in the education of every girl. It is only when investigation is carried beyond this, by directing the attention to the personal anatomy and physiology, that the mind is liable to become perverted. A little learning in anatomy and physiology is truly a dangerous thing. The heart will not do its duty more faithfully, nor will the stomach digest food better, because the one who possesses them knows all about their structure and functions. On the contrary, either of these organs may be greatly disturbed by thinking about them. This is often illustrated by students of medicine, who for want of proper subjects, dead and living, are obliged to turn their attention to their own bodies as a means of illustration.

To study the structures and functions of one's own body

is a kind of vivisection which is nearly always followed by bad results. Introspection and study of, and watch over, one's symptoms and functions are excellent means to pervert and ruin health. This road to ruin is, alas! often opened by the physician himself, who lays too much stress on every trivial symptom, and talks too much in the presence of the girl. I have great apprehensions about those patients who keep a constant watch of their symptoms.

Next to the doctor in the order of mischief makers in the business of producing introspectors is the intelligent mother who has had lessons in physiology. Such a one usually injures her own children and those of her neighbors who come within reach of her amateur teaching of the laws of life. It is ridiculous to tell a child that it must not eat candy or anything except at the proper meal times, *because* it will injure the stomach and cause dyspepsia and general ill health by exciting the secretion of gastric juice at improper times, and creating a false appetite by deranging the functions of the pneumogastric nerve. How much wiser it would be to have a child obey the laws of health because its parents directed it to do so!

I have seen children thrive best who first obey and afterward learn the reason of things. At first it is absurd to "appeal ever to their reason."

Social problems, and what girls should know concerning puberty, menstruation, and the sexual organs, are seldom touched upon by those who otherwise are excellent teachers for girls; and the amateur physiologist and psychologist are thus left full sway to work great mental and often physical harm in those who are destined to be the mothers of the race.

CHAPTER III.

MENSTRUATION.

MENSTRUATION is a function or physiological process which is performed periodically. It is established when the sexual organs have attained their complete development, and recurs at stated times, excepting during gestation and, as a rule, during lactation. Many theories have been advanced in ancient and modern times regarding the causation of menstruation, but since they differ so much, and since many are so obscure, a discussion of all of them is practically valueless.

Menstruation is almost wholly dependent upon the influence of the ovaries in the economy, since the flow is never established in those in whom the ovaries are congenitally absent or anatomically defective. Again, those who have menstruated in a perfectly normal way for years cease to do so, as a rule, when the ovaries are removed. The same cessation of menstruation occurs at the menopause, when the ovaries undergo a retrograde degeneration. I take it, then, that ovulation, which is the essential function of the ovary, is an initial action in the generative cycle and awakens the necessity for menstruation in the uterus. So far, then, as the causation of menstruation arises in the sexual organs, the ovaries are certainly the most important factor. It has often been observed that ovulation occurs frequently without any apparent relation to menstruation, and that maturity of the ovule in the Graafian follicle occurs in early life before puberty; but ovulation at this time is not complete, since, in most cases of this kind, the ovule degenerates without rupture of the follicle.

It has also been observed that ovulation may go on after the menopause, and these facts have been offered in argument against the influence of ovulation, or ovarian function upon menstruation.

Modern physiology clearly proves all cell activity to be very much more dependent upon nerve influence than upon blood supply or any other systemic condition.

Menstruation is so far from being regarded at the present day as mechanical that not only is it considered a "nervous function," but a special nerve—the menstruation nerve described by Johnstone—has been found as its governor.

Many well-known events strike the observer as strong circumstantial evidence that menstruation depends upon the nerves—upon the nervous system—probably upon a special nerve center.

Among these are its periodicity; the mental (psychical) transformation at its onset; the perturbation of the nervous system at its subsequent rhythmical recurrence; the frequency of pain with the flow; the changes in vitality, energy, and metabolism just around the period; the peculiar and well-known emotional and mental conditions that supervene upon the stoppage of this periodical flow; and—what the least observant must have had forced upon him—the premature oncoming or cessation of it resulting from strong emotional disturbance—as a rule, sudden and unexpected.

Comparative anatomists tell us about uterine contractions induced by direct stimulation of many pelvic nerves, and they have shown conclusively that there is a parturition center in the lumbar spinal cord.

There is probably in this same region a menstruation center, from which the pelvic splanchnics, starting in Clark's columns, carry impulses that run along Johnston's nerve. This trunk enters the uterine cornu beneath the Fallopian tube, starting down in the base of the broad ligament.

While the existence and position of this center are not today as certainly known as those of the vaso-motor and respiratory centers, nevertheless impartial experimentation upon

animals and careful dissections upon the human cadaver leave little in doubt. And, too, in this lumbar enlargement of the spinal cord are micturition, defecation, erection, ejaculation, and parturition centers. Why not a menstruation center?

Nerve impulses reach the uterus from the ovarian plexus as well as by way of the pelvic splanchnics, in which plexus the menstruation nerve is found.

Constructive metamorphosis in the uterine mucosa, probably best shown in the preparation of a decidua, proceeds between the menstrual epochs, the organ at this time being influenced by anabolic nerves or impulses. But periodically catabolic influences are supreme, and destructive metamorphosis is the result: menstruation occurs.

Many who claim that the blood supply from the ovarian arteries is the great factor in menstruation have failed to see how the trend of modern physiology is steadily against the association of functional activity with blood supply alone. And, again, they must have overlooked the fact that in ligating the ovarian arteries the ovarian plexus is simultaneously tied.

Removal of both ovaries has, in a few cases, caused no cessation of menstruation. Now, if in the ovaries or in the tubes lies the certain cause of menstruation, then these well-authenticated events could never by any possibility have taken place; but what is more reasonable than to imagine the escape in a few operations of the nerves which proceed from a menstruation center?

One is led to admire the deep significance of the term *sympathetic system* that the old physicians applied to certain nerves; and a constant tendency of modern investigation is to prove how many complex events throughout the entire body are brought about from local changes in organs in connection with these sympathetic nerves.

Menstruation depends not so much upon one factor as upon several special organs and functions. The ovaries stand pre-eminent in the causation, and, after them, the nutritive

(blood) supply, the spinal nerves and their associates, and, lastly, the cerebral influences which are partly voluntary and partly involuntary.

Concerning supplemental nutritive influence or plethora upon menstruation, it is certain that provision is made in the general nutritive system for sustaining the function of the uterus in the performance of the function of menstruation, and in yet the higher and more complete function of utero-gestation. At puberty there is a supplemental nutrition, which is directed to the sexual organs in order to sustain them in the performance of their function. That there is an increased determination of blood, charged with supplemental nutritive material, which prepares the uterus for the function of gestation, is a well-established fact. This occurs periodically, and if gestation or conception does not occur when the uterus is in this, its highest anatomical development and functional activity, menstruation occurs, apparently, for the purpose of eliminating this special nutritive material which is momentarily useless for the higher demands of gestation.

From the standpoint of the scientist this brief outline may not be convincing ; but for the practitioner—whose chief object is to have some rational conception of a function which will enable him to comprehend the conditions under which it is performed, and to appreciate the nature of the process of menstruation, so that its derangements and their causes may be clearly comprehended—this account may be sufficient and satisfactory.

THE ANATOMICAL CHARACTERISTICS OF MENSTRUATION.

There are still some differences of opinion among the highest authorities regarding the anatomical changes which occur in the endometrium during menstruation. The facts which I have been able to gather from these authorities are, that for a few days preceding the menstrual flow the mucous membrane attains its highest development. The entire membrane becomes very much thicker than at any other time, in some cases being about one fourth of an inch in thickness ; on the

surface minute depressions are observed, at the bottom of which are the mouths of the utricular glands. The vascularity becomes very marked, giving a dark-red appearance to the membrane. Then the epithelial layer undergoes fatty degeneration, and the fine vessels of the membrane, thus denuded, rupture, and hæmorrhage takes place. The extent to which this fatty degeneration and elimination of the mucous membrane occurs is estimated differently by different observers. Williams claims that the entire mucous membrane undergoes degeneration, disintegration, and elimination. Others limit the degeneration to the epithelial layer chiefly.

The cause of the hæmorrhage is probably threefold: First, the weakening of the vessel walls by the degeneration of the epithelial layer; secondly, by the general hyperæmia of the uterus; thirdly, the uterus contracts, and so increases the tension upon the capillaries of the endometrium in a marked degree. Dr. Johnston, who has given much time and attention to this, expresses the idea that the mucous membrane of the uterus acts more like an open gland in the performance of its function, claiming that not only is there fatty degeneration and elimination of a portion of the mucous membrane, with rupture of the capillaries and hæmorrhage, but also that there is a free elimination of leucocytes and nutritive material, so that menstruation is more closely allied to a glandular secretion than anything else. His views have always seemed to me to be more accurate and in accordance with the actual facts than any other. They certainly correspond with the idea that the mucous membrane prior to menstruation is prepared to take up the function of development of the embryo, and not being called upon to do so because of absence of impregnation and conception, the nutritive material stored up, so to speak, in the uterus is eliminated in menstruation.

CONDITIONS NECESSARY TO NORMAL MENSTRUATION.

Regarding the conditions necessary to normal menstruation, we possess more definite knowledge than upon the

theory of menstruation itself. The first condition is that the general organization should have attained its complete development; the sexual organs (ovaries and uterus) should be fully developed and in a normal condition, so far as freedom from marked organic disease exists; there should be an abundant supply of nutrient material, which presupposes that the general organization is in a normal condition; there should be normal innervation, and the environment should be agreeable to the whole being.

Menstruation being thus dependent upon these various conditions, the normal performance of this function is evidence of a fair degree of health of the general organization and of the sexual organs. This is important, because it is a sort of index to the general condition of the individual. On the other hand, derangement of this function suggests at once to the physician that there must be some lesion of the organization or mal-environment which is responsible for this impaired or deranged function. This necessitates keeping in view not only the conditions upon which the function is dependent, but the laws which govern it. The first is, that menstruation should be established when the general organization has attained its development and the sexual organs have undergone secondary development or maturation; that the function should recur periodically and with regularity, say, every twenty-eight days, and that it should continue from four to eight days, according to the characteristics of each individual; that the flow should amount to from four to eight ounces, and that this function should continue uninterrupted until the menopause, at about the forty-fifth year, except when it is supplanted by the higher uterine function of utero-gestation, or is absent because of lactation. The character of the flow should be somewhat uniform—that is to say, it should be free from coagula, indicating that probably it contains less fibrin than normal blood; it should contain the *débris* of the exfoliated mucous membrane, and should have more leucocytes in it—perhaps also more phosphoric and lactic acid—than blood of the general circulation.

While there is some uniformity among women in regard to all the laws of menstruation that have been mentioned, there is yet a great variation therefrom. The age at which menstruation appears differs greatly according to climate, heredity, environment, hygiene, health, and disease; but it should begin when general development is complete, or nearly so, and *not* before, and it should not remain absent afterward. With reference to the time of recurrence, duration, quantity, and to some extent the character of the flow, there is also a great variation. It appears that each individual is a law into herself for each of these factors; but when once certain rules are established in a given case they should be—in fact they are—maintained during good health and under favorable circumstances; and any marked deviation is indicative of some defect in the conditions necessary to normal menstruation.

CHAPTER IV.

DERANGEMENTS OF MENSTRUATION (GENERAL MALDEVELOPMENT).

Two important points here demand consideration: The discovery, *first*, of the nature of the derangement; and, *secondly*, of the defective condition or conditions inducing the imperfect function.

Premature menstruation first demands attention. By this is meant that the menstrual flow is established before the individual has completed general development. The indications determining that menstruation is premature are: The subject shows clearly in form and outline that the transition from girlhood to womanhood has not been attained; the mammary glands have not been completely developed; the evidences of maturity of the external organs of generation are wanting; the pelvis has not attained the female type, and the mental characteristics of maturity are not defined.

The history of cases of premature menstruation differs widely in different cases; but, as a rule, the appearance of the menstrual flow is preceded by more or less headache, backache, a sense of fullness or pelvic pressure, increased vascular tension, and general malaise. These various symptoms are summed up in the expression menstrual molimen. This may pass off in a few days, to recur after three or four weeks, and then the menstrual flow appears. It is understood that the subject is too young, too small, and usually not in vigorous health—in other words, that the general development has not been completed. In some cases there is evidence that the secondary development of the sexual organs

has been completed; in other words, sexual development has run ahead of general development.

In another type, while there is a premature development of the sexual organs, it is still incomplete. Nearly all in this class give evidences of premature sexual development, as shown by the increase in the mammary glands and the pelvic outlines and external sexual organs, the usual signs of puberty in various degrees of completeness. And even when menstruation is established it is seldom normal. More pain and general disturbance attend it than are usual. The flow is often short in duration, and contains coagula. In some cases the flow is profuse and lasts too long, and has a markedly depressing effect upon the general strength. In the majority the flow does not return regularly, intervals of two to six months often occurring; but in those who have a free flow, the function occasionally appears every two or three weeks.

The *cause* of this premature menstruation is in a large measure heredity; evidence of this is obtained from the mother's history. Next, and perhaps more important in the way of causation, is immoral environment, as shown in the form of unwholesome associations. Neglected children among the very poor and very rich, and also unoccupied young girls, frequently associate with older and somewhat depraved acquaintances, and have their attention directed to the sexual organs prematurely. Improper education also has much to do with this. Bad habits acquired from local irritations, such as ascarides in the rectum and want of cleanliness of the external genitals, are potent factors.

Not infrequently adhesions of the prepuce to the glans clitoridis, beneath which caseous secretions accumulate, produce a local pruritus, which is further aggravated by the subject seeking relief by additional irritation; in other words, the habit of masturbation, which is acquired by unfortunate associations or from local irritation, is a fruitful cause of premature menstruation. Finally, imperfect innervation coming through hereditary influences or from overstimulation, which results in precocity, may induce it. This

overexcitability of the brain and nervous system, I am certain, leads to premature menstruation, because I have quite frequently found this derangement in the establishment of this function among this class of girls.

In the treatment of this abnormal condition the patient should be removed from all sources of excitement, and while agreeably occupied mentally, rest should be secured and in an even temperature. If the patient is attending school, it is better that she should be kept at home so as to carry out more fully these necessary attentions. If there is much pain it should be relieved by bromides or some of the coal-tar products. It is important that this rest and care should be kept up after the flow subsides in order to secure a complete post-menstrual involution. After this the treatment should consist in removing, as far as possible, the causes that are responsible. If local irritations exist, they should be relieved, and associations with unsuitable companions should cease. In short, the object is to divert the nutritive forces from the sexual organs so that menstruation shall not be continued regularly, in order that general development may be encouraged to go on to its completion. All symptoms of nervous disturbances should be met by a suitable occupation and, if necessary, by drugs; and general nutrition must be improved and maintained in the most perfect manner possible.

Premature Puberty.—Closely associated with premature menstruation is premature puberty, in which the development generally is premature. The sexual characteristics in these cases appear at too early an age, and growth, to a corresponding degree, falls short. Such cases, in this country at least, attain their maturity at a time that would be normal in some of the tropical climes. They really have a very short girlhood; apparently seem going from childhood directly to womanhood. The laity call them, and I think very properly, "old-fashioned young ones." They prematurely become little weakly women.

Here menstruation occurs in accordance with the law which establishes this function when general development is

complete. The deviation from the normal is the premature development of the general organization and the sexual system included.

The cause, as in the previous condition, I again believe to be heredity. Most of these cases I have seen among the daughters of women who developed prematurely. I have no doubt, however, that mental or physical overtaxation, or both, has much to do with producing this premature and consequently imperfect development.

In the treatment of these cases little can be accomplished beyond giving attention to the general health and occupation of the patient. All overtaxation should be carefully avoided, and general nutrition must be maintained in order that the patient may have time to grow; her development having been completed in a premature and perhaps rather imperfect way, it is only within the power of the physician to see to the general health in order that the growth of the individual may not be retarded, but encouraged to its uttermost.

RETARDED OR DELAYED PUBERTY.

The most marked cases of this kind are seen in those in whom the ovaries or uterus are absent or entirely rudimentary. In such cases, while general development may go on in a normal way, the sexual characteristics are never developed. All the sexual organs remain, as a rule, in a rudimentary condition, and in place of the sexual characteristics of body and mind becoming apparent at the proper age, the girl's development stops or else assumes the character of a common or mixed type, not wholly masculine nor yet wholly feminine, yet rather inclining, physically at least, to the masculine type.

The cause seems absolutely unknown. The condition can not be attributed to heredity or to any of the known causes of arrest of development during early life. It is possible that it is due to some disease or derangement during embryonic evolution. It may come from such constitutional conditions as chlorosis, plethora, or tuberculosis. There is no

difficulty in determining the condition—in other words, in making a diagnosis—because it is easily seen that, while the subject has passed the period of puberty, all the sexual characteristics are lacking, excepting that the external genital organs are of the feminine type. Neither is there anything that can be done to change or improve such cases, hence treatment need not be discussed.

RETARDED PUBERTY, WITH PARTIAL DEVELOPMENT OF THE SEXUAL ORGANS.

We not infrequently observe cases where general bodily development and general health are complete and excellent, and where, to a certain extent, the sexual organs have gone on toward their full development. But while all the evidences of maturity exist and the girl is old enough to menstruate, she fails to do so.

An examination reveals no arrest of general development.

There is no history that tells of obstruction of a flow; no history of any symptoms that announce the oncoming of one.

In making a diagnosis of such a case the climate should of course be primarily considered; between the Hindoo and the Eskimo a period of three years, at least, represents the difference of the time of commencement of this function, and girls in towns begin to menstruate sooner than girls in the country.

Causation.—This condition is usually caused by the nutritive forces being directed toward the general organization. Such subjects generally have enough of physical exercise, in fact, sometimes too much, as shown by those that are fond of outdoor sports, and do a reasonable amount of mental work.

Environment has a great deal to do with these cases of delayed menstruation. Among the poorer classes, outside of cities, who perform a great deal of hard manual labor out of doors, who begin work early in life and in whom bones and muscles are well developed, menstruation is often delayed.

Again, active brain-workers in good health, but who are largely cut off from social intercourse, also exhibit this delay.

Here there must be a want of balance between the nutritive and reproductive systems from overwork of the higher functions in the latter case, and of the more mechanical functions in the first-named instance.

Treatment.—When delayed menstruation or retarded puberty arises from excessive physical work, the body should have rest and the mind should be given work. Any derangement of innervation or nutrition must, of course, at the same time be corrected.

On the other hand, if close occupation in mental work is the cause, then rest of mind and more agreeable social surroundings should be prescribed. Recently I have seen an illustration of each of these classes.

The daughter of a well-to-do farmer was brought to me, and although she was old enough, sufficiently well developed, and in good health, she had never menstruated. I found that she was largely occupied with dairy and farm work, and had had but little opportunity for diversion or mental exercise. I recommended that she should be brought to the city and sent to school. The change of occupation and surroundings and the agreeable mental stimulation were sufficient to establish menstruation, and it has since continued normal. At the same time I had a young lady from a boarding school who came here from a country town to complete her education; she was well developed in every respect, enjoyed good health, and was a remarkably good scholar—without being brilliant or precocious—devoting her time to her studies, and with no desire to take part in the frivolities or amusements of her associates. When she was eighteen her mother and her teacher became anxious about her not having menstruated, and she was brought to me. I advised her to give up her severer studies, to continue her music, to go to places of amusement, and into society; in other words, to change the whole order of her life. She recovered.

To formulate this in another way I may say that in the transition stage from girlhood to womanhood irregular and imperfect development is no doubt caused in many cases

by heredity, and in those cases where there is a hereditary tendency to imperfection of structure, mal-environment exercises its strongest influence in bringing them about.

These may be arranged in two classes: first, those cases where there is some arrest of development; and, secondly, where there is faulty structure either in the general organization or in the sexual organs. The general organization may be so imperfect as to be unable to complete the development of the sexual organs, or if the latter are well developed the general nutritive system becomes unable to sustain them in their highest functional activity. The results are often the same, while the lesion may be now in the general organization and now in the sexual organs alone.

Another class is that wherein there is no imperfection of development, but the whole structure is not well balanced. There is a lack of harmony between the different portions of the organization: for example, all the viscera may be well developed and in a fair degree of healthful activity, but the brain and nervous system may predominate to such an extent that their demands can only be satisfied at the expense of the rest of the economy. Again, take the chlorotic girl who may have all the characteristics of the sex and a fair degree of development, but in whom the circulatory apparatus is undersized, and hence the whole organization, including the sexual organs, suffers to a certain extent from malnutrition.

ABNORMAL DEVELOPMENT OF THE SEXUAL ORGANS, CHIEFLY IRREGULARITIES IN EVOLUTION.

Premature Development of the Sexual Organs.—In this class of cases the development of the sexual organs begins too early and goes on in a regular and normal way so far as the structure of the sexual organs is concerned. It is abnormal simply because it is premature. The development of the sexual system takes place before the general organization is sufficiently matured to sustain it in the performance of its function. The evidence of this premature transition from girlhood to womanhood is that it becomes observable too

early in life; but since there is great latitude in regard to the time when girls attain puberty, it is only shown to be abnormal when the general organization does not keep pace in growth with that of the sexual system.

The cause is largely a matter of mal-environment and heredity. In many of these cases I have found that, according to the history, the parents were undersized, and the mother matured early. When this is the case, environment acts more effectively in producing the irregularity. It not infrequently occurs, however, when there is no hereditary tendency to this early puberty, that it is brought about by associations which direct the attention of the child to the subject of procreation or reproduction, and hence the premature development may be traced directly to deranged innervation—overstimulation of the emotional temperament, as I have ventured to call it.

Treatment.—If seen at the outset much can be done by diverting the attention of the child from the sexual system. This can be effected chiefly through suggestion, parents and teachers directing the mind to other subjects, giving it a certain amount of rest by imposing fewer studies, less mental work and more physical exercise, so as to develop the respiratory, circulatory, and muscular systems. This might be called treatment according to the therapeutic rule of derivative action.

DERANGEMENTS OF MENSTRUATION FROM MALFORMATIONS OF THE OVARIES.

From what has been said regarding the influence of the ovaries on the general and sexual systems, it will be understood that the ovaries are necessary to menstruation, and that any defect of the ovaries will derange the functions of the uterus.

When the ovaries are absent the whole being is imperfect and peculiar, and the physician is powerless to aid. His function ends when he has made a diagnosis. Menstruation does not occur, nor is there any need for it, and hence treatment is useless.

There are cases in which, by inference, the ovaries are presumed to be imperfectly developed and menstruation is imperfect. Such women menstruate at long intervals and then only for a short time. They are usually phlegmatic and defective in sexual instinct. The diagnosis is made by exclusion, and the treatment is *nil.* If such cases are seen early in life, they may be improved by the general management recommended in cases of delayed puberty. Such cases are seldom seen until later in life. They generally enjoy fair health, and it is not until after puberty, when they notice the derangements or imperfect menstruation, that they seek the advice of the physician.

DERANGEMENTS OF MENSTRUATION FROM MALFORMATIONS OF THE UTERUS.

There are a great number of malformations of the uterus, the majority of which are due to arrest of development at the various stages of evolution either in embryo or at the period of puberty, when secondary development takes place. Paradoxically placed among these is one generally described as absence of the uterus; but when the ovaries are present there is, as a rule, a rudiment of a uterus, although it is very little more than a short, cordlike mass of fibrous tissue. Amenorrhœa occurs in this class.

With this rudimentary condition of the uterus when associated with the presence of normal ovaries, the subject usually develops all the characteristics of sex completely at puberty, but fails to menstruate. There is a marked menstrual molimen, and in some cases there is vicarious menstruation. The severity of the symptoms of the menstrual molimen generally increases from month to month, and the patient's general health deteriorates. The nervous system exhibits the bad effects of this physical defect by headaches, sometimes inactivity, drowsiness, and subsequently gastric and hepatic derangements. These latter are at times acute, and the patient will be seized with gastralgia, nausea, and vomiting, and now and then an acute attack of diarrhœa. It is

usually after the recurrence of these attacks that the patient seeks advice of the physician. When the evidences of development are satisfactory and there are no indications of ill health, excepting nervous and digestive disturbances, and after the ordinary treatment for the relief of these has failed to bring on the menstrual flow, it is necessary and right that the patient should be examined, to discover the condition of the pelvic organs. Perhaps a doubt may at first exist in the mind of the practitioner as to whether there may not be an imperforate hymen ; but if several months have elapsed since the completion of development, or the arrival of puberty, and there is from the history no evidence of distention of the vagina and uterus, one may strongly suspect that the difficulty is some malformation of the uterus, and here also an examination becomes necessary. As a rule, I deem it expedient to give an anæsthetic (nitrous-oxide gas being by far the most satisfactory), and then a digital examination may enable one to find the uterus, or to find that it is only present in the rudimentary condition. As this malformation is sometimes associated with atresia of the vagina, which precludes the possibility of making the digital examination, the condition may only be determined by rectal touch. It has been suggested to use a sound in the bladder at the same time that rectal touch is practiced, but I hardly think this is ever necessary. If the uterus is absent, or what practically amounts to the same thing, there is only a small, cordlike mass in the place where the uterus ought to be, this will be information sufficiently accurate to guide the gynecologist in the management of the case.

Causation.—There is really very little known about the causes of many of these malformations ; they are no doubt exerted during embryonic life, and on that account are not easily discovered. We may say it was due to some disease of the embryo, but this is self-evident and affords no explanation of the facts.

Treatment.—When we find a patient at puberty with the absence of the uterus, or a rudimentary uterus, there is noth-

ing that medicine or surgery can accomplish to partially or wholly complete the process of development. All efforts must be directed to relieving the patient from the consequences of the tendency to menstruate, owing to the presence of the ovaries. The danger is, that the menstrual molimen will increase in severity and that the constitutional disturbances will also become more marked. The baneful effects of the absence of menstruation, owing to the absent or rudimentary state of the uterus, increase as time goes on. The headache and nervous disturbances of nutrition increase until not infrequently the patient has convulsions at the menstrual periods, and may temporarily become partly deranged in mind. At first there is a sort of plethoric condition, and there seems to be a retarded elimination owing to imperfect excretion on the part of the liver and kidneys, more especially the liver. In time the patient that at first seemed to be quite full-blooded is apt to become anæmic, and assumes a bronzed hue, indicating an obscure toxæmia. To guard against these, I have at the menstrual period, when the constitutional disturbances are most marked, generally employed bromide, twenty to thirty or forty grains, three times a day, until the nervous perturbation is relieved. As soon as the symptoms begin to subside the bromide should be discontinued; if there is the slightest tendency to constipation, a saline laxative will often give great relief. By repeating this treatment at each monthly period, I have been able to carry some patients along for months or years until the general organization could be taught, as it were, to accommodate itself to the absence of this important menstrual function. If the nervous and digestive symptoms continue between the menstrual periods, treatment should be kept up, smaller doses of bromide being given, and the bowels kept free. Should the kidneys be inactive, as they sometimes are, diuretics may be given. Active, wholesome mental and physical occupation is of importance and value, the object being to occupy the vital forces so as to leave less supplemental nutrition for purposes of menstruation. Diet should also be attended to. While I have

never believed that the human race ought to be vegetarians, I am perfectly well satisfied that these imperfect women do very much better on a vegetable diet, or at least a diet that includes very little animal food. Milk, eggs, and fish may be eaten, but not much of the latter. Social conditions should be directed as far as possible. Such patients are naturally inclined to society, but I find that it is unfortunate for them when they get sufficiently interested in the opposite sex to marry. I have seen two who were married, and they suffered more and longer than some others that remained single.

I have always believed that if this tendency to menstruate persisted, and relief could not be obtained through medication, the removal of the ovaries would be justifiable. It has not been my fortune, however, to see any case where this became necessary, although some of my patients that have passed out of my observation may have submitted to this treatment without the fact coming to my notice.

IMPERFECT MENSTRUATION FROM INCOMPLETE DEVELOPMENT OF THE UTERUS.

The malformations of the uterus naturally divide themselves into two classes: First, those where the arrest of development occurs so early in the process of evolution that the organ remains rudimentary and entirely incapable of performing any function; and, secondly, all of those where development has progressed to a point which enables the uterus to perform the function of menstruation in an imperfect way, the degree of menstruation depending upon the extent of the malformation. The first class has just been disposed of. The forms of malformation belonging to the second class, which is most frequently seen in practice, are uterus bicornis or unicornis, infantile uterus, and the various forms of flexion of the uterus. In the malformation known as double uterus, or uterus duplex, the function of menstruation, in the cases that I have seen, was perfectly normal, and I have seen several who have borne children. The same may be said of uterus

bicornis, but, as a rule, in this malformation the function is performed imperfectly. In fact, in cases of uterus bicornis or unicornis, and in some cases of flexion, menstruation is usually short in duration and often scant in quantity, and in the vast majority of cases attended with dysmenorrhœa, which either occurs at puberty or is acquired soon thereafter. The history of those cases varies, of course, according to the malformation, and yet there is a sameness about all of them. Many arrive at puberty rather late in years, although some of them may menstruate prematurely. Menstruation in a general way is irregular, the intervals between the periods usually being too long. The flow is often scanty and of short duration, as already stated, and dysmenorrhœa is the rule, the character of the pain being rather acute and colicky, commonly intermittent or remittent, located in the uterus, commencing twelve or twenty-four hours before the flow, and frequently relieved or arrested entirely when the flow is fully established. If this imperfect menstruation continues for years, other symptoms are added to the dysmenorrhœa, such as backache, pelvic tenesmus, occasionally leucorrhœa, and nervous disturbances, in the form of headache, irritability, and weakness of the nervous system, as shown by easily induced fatigue. The digestive organs are usually impaired.

Causation.—In regard to the causation of uterus unicornis or bicornis, little if anything is known, as it is an affection of embryonic life. The persistence of the infantile uterus and of the various forms of flexion of the uterus is no doubt caused by any and all influences which interrupt the process of secondary development at puberty. In the preceding part of this work the conditions necessary to normal development and the effects of certain environments in arresting development have been treated of, so that it is only necessary to repeat that general malnutrition, in whatever way brought about, is the chief, perhaps the only, cause of this arrest of development at puberty.

Treatment.—If attention is called to this class of cases

when they begin to menstruate, and to the imperfect way in which they perform this function, much may be done to aid in completing this development, by treatment directed to benefit the imperfect and painful menstrual function. Of course, the physician can only reach the uterus through general nutrition, and so everything that can contribute to improving the general health, and nutrition should be employed. If insufficient food is taken because of the loss of appetite, every means should be employed to persuade the stomach to do its duty. The whole alimentary tract should be brought into the best condition by tonics, laxatives, and appetizers, and if there is anæmia it should be overcome. In case the general nutrition appears to be fairly good, then sufficient muscular exercise should be employed to stimulate the nutrition of the muscles, hoping that thereby the uterus which belongs in part to the class of muscular structures may be improved. After this, exercise and postural treatment should be advised; the knee-chest position may be assumed, or what is more acceptable to most young girls is to rest on the back or sides with the hips elevated. Short periods of rest should be insisted upon after each period of active exercise. (See chapter on The Invalid's Habit for this in detail.)

This general plan of treatment should be kept up as continuously as possible, and attention also should be directed to giving relief during the menstrual period. If the dysmenorrhœa occurs in one otherwise in good health and possessed of a liberal blood supply, ten grains of bromide of soda and three to five grains of antipyrine given in cherry-laurel and mint water, once in two, three, or four hours, according to the necessity, often give most marked relief without producing the slightest ill effects afterward. It is well to begin as soon as the slightest pain is manifested, and with those who are very irregular as to time I have begun the use of the medicine a day before the flow came on, the patient being able to foretell its approach by the symptoms characteristic of the molimen. In those that are naturally of delicate constitution, or have been reduced from dysmenorrhœa having

continued for some time, I have found that the prescription suggested above almost invariably makes the patient worse. Diffusible stimulants, on the contrary, then give relief. Aromatic spirits of ammonia, twenty or thirty minims, five drops of chloric ether, and five of cannabis Indica, given in sirup of acacia with some aromatic, such as cardamom or mint, every three or four hours, according to the severity of the suffering, answer, as a rule, all requirements. I find that such are the cases that derive relief from gin or any alcoholic stimulant. Quinine and Warburg's tincture have been employed in dysmenorrhœa, and in some of the cases belonging to this class the effect is quite beneficial; but such remedies are not as agreeable or as efficient as the prescription already given. I found some patients who did not take cannabis Indica well, and I have substituted for it moderate doses of belladonna, three to five drops of the tincture every three or four hours with ammonia and ether; when the belladonna and cannabis Indica are both unacceptable, I have used camphor. I have given large doses of camphor water with a little ammonia and ether with marked effect. Sometimes there is so much irritability of the stomach that it is difficult to medicate at all; then I have used bromide and antipyrine by the rectum; when this was contraindicated I have used quinine in solution, and when that proved insufficient I have given the ammonia and chloric ether in sirup of acacia, enough to prevent irritation of the rectum, and also to make its absorption more slow. I have also employed camphor in this combination by the rectum, using it by instillation. In patients of a gouty or rheumatic diathesis I have found antipyrine and salicylate of soda, five grains of each three times a day, given for a day before and during the first day of the flow, to be of great advantage.

DELAYED PUBERTY FROM CHLOROSIS.

Chlorotic girls mature slowly and menstruate late; and although there are exceptions to this rule, they seem to prove it.

Chlorosis is a condition where the vascular system is imperfectly developed. The aorta especially is small and thin-walled, the inner lining of the arteries sometimes exhibits fatty degeneration, and the uterus and ovaries are abnormally small. In addition to their size being abnormal, the sexual organs and the heart also may be somewhat degenerated.

Chlorotic blood has fewer red corpuscles and a smaller amount of hæmoglobin than normal blood.

The blood-making facilities are imperfect, and Zimmermann regards chlorosis as in part due to functional derangements of the autogenetic tissues, so that chlorotic girls are usually anæmic.

But despite this anæmia and poor development of osseous and muscular systems, there is a tendency to plumpness, and the figure is well rounded from the abundant adipose and cellular tissue.

The sclerotic coat of the eye is pearly, the face is puffy, the mucous membranes are very pale, and the countenance is waxy, yellow, or yellow-green—the "green-sickness."

Menstruation occurs at a later age than in normal girls, and the flow is scanty and of short duration. The intervals between the periods are also likely to be longer than normal.

Causation.—It is clearly evident to my mind that chlorosis generally arises from heredity. This opinion is based upon the fact that it usually manifests itself in infancy. While it rarely attracts attention until puberty, it begins at the beginning of life. It no doubt is true that toward the period of puberty and during the secondary development of the sexual organs the anæmic characteristics of chlorosis may increase ; but in every case that I have seen there was a chlorotic condition existing before the period of puberty. I am further sustained in this view by the fact that many years ago I submitted the question of chlorosis, as seen among children, to Dr. A. Jacobi. I related a case—an exceedingly well-marked one—that I had seen in an infant, and I found that he in his experience had found the chlorotic state in infancy, and that it continued throughout life.

Yet if chlorosis is usually an inheritance, it can be greatly aggravated by mal-environment early in life, and this has a distinct bearing upon its management.

Treatment.—It is of the greatest importance to detect chlorosis in early life, so as to overcome the defects of the peculiar organization before the period of puberty. In chlorotic young girls there is a dislike for active muscular exercise. They are quite phlegmatic in temperament and easy-going in disposition. This leads them to select the life which further encourages the defect of development of the circulatory apparatus and favors the accumulation of adipose tissue, so that, as a rule, they may be said to be fat and lazy; and while they are very often mentally bright and of studious habits, these characteristics, nevertheless, favor the imperfections of organization. Such children should be encouraged to take a large amount of muscular exercise of that kind which favors the development of the heart muscle and, secondly, the blood-vessels. While they are not disposed to take exercise as ordinary children do, they should be compelled to take as much. The diet should be of a nature to produce nerve, bone, and muscle, and not adipose tissue. The diet list which we usually give to patients in adult life to reduce fat should be strictly enforced upon chlorotic children. Sluggish action of the bowels and kidneys should be corrected; in other words, disintegration and elimination should be carefully attended to, and if not maintained in a normal condition by proper diet and exercise, medication should be employed. Constipation should be overcome by saline laxatives in case it is due to lack of secretion in the alimentary canal; but should it arise from feeble muscular action, belladonna and nux vomica in small doses frequently repeated are by far the best remedies. It may be necessary, if anæmia persists, to give restorative tonics.

The blood-making function must be stimulated, and I find the iodide of iron—or iodine in some form with iron—to increase disintegration, to aid elimination, and to favor blood formation. I have long used bichloride of mercury also in

very small doses with chloride of arsenic and iron, making the doses correspond to the age of the patient. By this course of treatment congenital chlorosis can be, to a large extent, overcome before the period of puberty. Unfortunately, however, we do not always see those cases until they become markedly anæmic and depleted, because they break down, as it were, when they come to the period of development of the sexual characteristics; in other words, when they come to the secondary development of the sexual organs, not possessing supplementary nutrition, they are incapable of taking up the higher nutrition of the sexual organs necessary at puberty, and so they become enfeebled and more anæmic, and show the characteristics of chlorosis in a more marked degree than ever. Under such circumstances it is necessary to give mental and physical rest, and, in place of active muscular exercise, to employ massage until the nutrition is so far improved that the patient can take light exercise.

If they are not able to get ordinary exercise, such as that of the child at play, or if walking, horseback riding, dancing, or other healthful and interesting exercise is for some reason impossible, they should take a course in gymnastics. In these cases diet and restorative tonics claim marked attention.

When such chlorotic patients attain puberty, and menstruation appears, there is often an apparent tendency toward general improvement. Menstruation seems to act favorably, nutrition seems to improve, and the anæmia to be slightly less marked. This is the case among those who menstruate rather freely. Occasionally a chlorotic subject is found who menstruates altogether too profusely; then, as a rule, she becomes worse, more weak and anæmic. Dr. Gerung, of St. Louis, has practiced arresting menstruation in anæmic and chlorotic patients, hoping by so doing to relieve them from this tax upon the nutritive forces, and thereby enable them to gain strength more rapidly. While this may be judicious treatment in cases of menorrhagia in chlorotic women, I am satisfied that it is not so in those who menstruate scantily or normally. In some of the more obstinate cases the restor-

ative tonics have to be varied from time to time. It is often necessary to give stomachics to induce an appetite. For this purpose I have found the elixir of pepsin, bismuth, and strychnine—a national formula—to serve admirably; a teaspoonful before meals is the dose.

In some very severe cases the anæmia is so great that the stomach is well-nigh incapable of digestion; and we know the marked frequency of gastric ulcer in anæmia.

When the digestive powers are at this low point, small quantities—administered at short intervals—of peptonized milk, beef peptonoids, koumiss, buttermilk, raw oysters, or sweetbreads should form the diet. These articles of food should be varied from time to time, and the drugs should also be given alternately, neither arsenic, strychnine, iodine, nor iron being continued for any great length of time.

The cold bath, the cold pack, the cold sponge-bath—all have had advocates as means of relief for anæmia; but careful observation tells me that a sponge-bath at a temperature comfortably borne by the patient keeps the skin active and produces all the good results that severer methods are said to obtain. As the patients get stronger the temperature of the baths should be lowered in order that a tonic effect should be produced.

When general health and the menstrual function are brought as near normal as possible, the diet, exercise, and mode of life should be the same as that advised for chlorotic girls *before* puberty has arrived; for this class of patients become exceedingly anæmic and suffer derangements of menstruation from the slightest overtaxing or excess. In other words, the treatment should be continued after recovery from the more marked symptoms.

This in brief brings the subject up to maturity—the establishment of the primary function of the sex—i. e., menstruation. The derangements of development and the consequent disorders of menstruation have been noted, and this leads up to Part Second, which deals with woman in her highest integrity.

PART II.

ACTIVE PERIOD OF LIFE, CHARACTERISTICS AND DISEASES.

CHAPTER V.

SEXUAL CHARACTERISTICS: STRUCTURAL DIFFERENCES BETWEEN THE SEXES.

The anatomy of the sexual organs of woman has been very minutely studied and described, and those characteristics of her organization are generally looked upon as the differentiating peculiarities of sex. But this view is a very limited one, for, in order to have a comprehensive understanding of woman, her whole organization, mental and physical, must be fully taken into account. She differs from man in a marked degree from sole to crown in structure, nerve condition, reactivity of organ upon organ and of function upon function! A clear appreciation of all the characteristics of sex is needed in order to comprehend the diseases of the sexual organs, and organic and functional derangements of the whole organization.

I propose to discuss somewhat at length the characteristics of woman and her functions in so far as they are modified by sex. Considerable attention will also be given to imperfections of structure arising from defective heredity and derangements in development. These may be termed transmitted imperfections and acquired deficiencies. The relations of hygiene and therapeutics to these imperfections of structure (not necessarily diseased), in regard to prevention on the one hand and correction or cure on the other, will have due

attention. This will be followed by a consideration of functional diseases, which are very common among women.

To describe a functional disease is to define it. Suppose the cells of a liver to be tardy in their elaboration of waste products and slow in throwing out bile into an intestine accustomed to the presence of this secretion. What happens? Dullness of mind, irritability of temper, loss of appetite, constipation, sallow skin, foul breath, and hæmorrhoids. The individual is sick; he knows it; the physician knows it, recognizes the condition, quickens the functions by time-honored remedies, and all goes well. Now, were sudden death to have overtaken this bilious individual, the pathologist could have found nothing in the liver at all at variance with our anatomical notions of a normal condition of that organ; yet he who is a physiologist as well as a physician, with eyes keener and surer than a microscope's lens, sees perversion of function and of function alone.

To give one more instance. Suppose a woman to have menstruated regularly every fourteen days, and suppose suppression to occur at one period from trivial causes. This suppression would entail all the signs of metastatic congestion. The woman would be ill, she would be functionally ill, and, too, when, were she like the majority of her sisters, she would have been in the best of health and spirits.

The genital apparatus in the case of a woman like this would be a healthy one as far as microscopic examinations go. Her disturbance is functional.

It is the perversion of an individual's functions, from the individual's own point of view more than from the *aggregate normal*, that I would denominate a functional disease.

I am led to believe that nerve influence upon the cells and their protoplasm is the chief factor in making them perform normal work—far more so than blood supply. And it is to nerve influence that we have to look for the production of function changes, making the cells do too much or too little, at the wrong time, or making them do too much or too little of some part of their duty. And these nervous impulses are,

in turn, brought about either by extrinsic influences, such as heat, cold, peculiarities of the atmosphere, or strong impressions made upon the senses by profound silence and darkness, or extraordinary noise and glaring light; or they may be induced by mental emotions which derange the innervation and, secondly, modify the circulation, assimilation, and destructive metamorphosis. By far the greater number of functional disorders that arise from deranged innervation have their genesis in morbid emotions. It is rarely that intellectual work injures the nervous system, and when it does so it is only after having first caused malnutrition and asthenia or exhaustion. In addition to this we may add that any strong and continuous taxation of one portion of the body which admits of decided inaction of the rest of the organization also leads to functional diseases; and, finally, long-continued derangement of any function is very liable to lead to changes of structure or to organic lesions beyond all repair.

Hence functional diseases, pure and simple, are only too surely followed by anatomical lesions, so that there arrives the time when "functional disease" becomes a misnomer to the precise mind, yet is all the more applicable to him who has followed the logical sequence of events, and who sees organic lesions as an offshoot of deep functional perversions. In this age, when the germ theory of disease is (deservedly) occupying the professional mind to a great degree, one must be careful not to overlook other fruitful sources of human suffering.

To recapitulate them in order—the conditions which are essential to health and upon which all hygienic and therapeutic principles must be based—the general organization must be on, or nearly on, what is recognized as the average standard of required perfection; secondly, that in addition to normal structure, so far as size, consistence, and arrangement are concerned, there must be harmony from a well-balanced state of the organization—that is, that no portion, organ, or system in the organization shall surpass the others

in development or function; in short, that a well-developed, healthful organization is the first essential, and that this shall be sustained by the requisite nutrition and healthful environments or surroundings, and, finally, a healthful exercise of all the functions.

Starting from this basis, it is necessary to consider fully the predispositions to disease arising from peculiarities of organization, transmitted imperfections or inherited tendencies to disease, and then the errors of hygiene in physical culture and in general education which tend to aggravate morbid states in the delicate and sickly, or that may produce those diseases. Women are predisposed to many diseases that are unknown to the opposite sex, owing to the general complexity of their sexual organs both in structure and function. Before puberty and after the menopause the sexes are more nearly alike; not nearly so dissimilar in regard to the diseases to which they are liable. But during the period of functional activity there are great divergencies which claim the attention of the physician. This is a field ample enough for observation and practice. Nor is it in diseases of the sexual organs alone that differences in the sexes are found.

A specialist in medicine must know more than the part he treats of. No part of the body should be considered independent of another in blood, nerve, or lymphatic connection.

Further, there are psychological, moral, and mental peculiarities that modify, if indeed they do not cause, *or cure*, diseases in woman.

Woman, owing to her peculiarities of structure and function, not only requires special hygienic care, but these peculiarities so modify the nature of diseases common to both sexes as to require special therapeutic treatment.

As a basis for hygiene and therapeutics it is necessary that the peculiar characteristics of the sex in structure and function should be clearly understood. Anatomy and physiology are the foundation of practical surgery and medicine. In the past the surgeon has leaned most upon anatomy and

the physician has been guided more largely by physiology; to-day both are equally dependent upon the knowledge of structure for guidance in the rational practice of all branches of the medical art. Knowing this, is the reason why I propose to take up the prominent features of the structure, functions, and physiology of woman which have a direct bearing upon the practice of medicine in diseases of women.

Within a few years the practice of medicine has made great advances, not so much in the development and discovery of new remedies as in combining many things in the management of disease. Less reliance is placed upon drugs and more upon hygiene or conditions of health. Doctors give less medicine, yet do more for the sick than in the past. In place of prescribing medicine and giving directions about diet, the medical attendant must see to the sanitary condition of the patient's house—diet, air supply, and the kind of nursing which includes watching the progress of the disease from hour to hour as indicated by pulse and temperature and the general condition of the functions all and singularly. Rest, passive exercise of the body, and proper occupation of the mind—all are sought to aid in therapeutics.

The Osseous System.—The skeleton in woman is noticeable in a general way on account of the lightness and delicacy of the several bones, and the fact that they are smaller than in man, except the bones of the pelvis, which are large, but quite smooth, and apparently not as strong as those of the masculine pelvis. The bones of the chest are in women relatively smaller than those of the pelvis; this determines her ovoid form, so characteristic of the sex. The smoothness and the delicacy of the bones are largely due to the lines and processes for the insertion of muscles being less developed than in man. The grooves and fossæ are also more superficial.

The Pelvis.—The pelvis compared with the rest of the skeleton is relatively much larger. The iliac bones markedly diverge above the superior strait, giving a distinct funnel shape to this portion. The true pelvis is larger in all its diameters than the masculine pelvis, and the pubic arch is triangular.

The depth of the pelvis from the superior to the inferior strait is not as deep as in the male ; the whole pelvis has a noticeable inclination, hence the symphysis is about three inches lower than the sacro-vertebral angle. The space occupied by the interarticular fibro-cartilages of the pelvic articulations is larger, and the joint between the sacrum and coccyx more movable. The cotyloid cavities are farther apart and situated a little more anteriorly in relation to the crests of the ilia. In short, the pelvis is more capacious although not as deep as in the male, the design evidently being to contain the more highly organized sexual organs, and also to form the framework of the parturient canal. The female pubis has the form of a saucer if we compare that of the male to the shape of a cup.

The Extremities.—The cotyloid cavities for the reception of the head of the femur being farther apart in women than in men, there follows a greater obliquity of the thigh bones from above downward, so that the knees appear to come more closely together than in the male. In order to maintain this obliquity, the neck of the femur forms with the axis of the shaft of the bone a more acute angle in women than in men. This width of the pelvis and obliquity of the thigh bones have given rise to the popular statement that women are knock-kneed, and also cause their peculiar gait in walking and running. These characteristics of this portion of the osseous structure, although not very marked, are important as a sexual difference, and add greatly to the characteristic form of sex.

There is a marked sexual characteristic in the humerus, in the tortuous groove which extends from its anterior to its posterior surface, and is no doubt developed from a rotation of the bone upon its longitudinal axis. Following in the side of the groove is an angle which is called the angle of torsion. This anatomical feature of the humerus is not as well defined in women as it is in men. It is also an interesting fact that it is more marked in the higher races, so that from this point of view the humerus is not as highly developed in women as in men.

The Clavicles are straighter in women than in men, and relatively shorter. This, taken in connection with the fact that the chest is narrower, makes the shoulders of women more tapering as a rule.

The Cranium.—In a general way the head of woman is smaller than that of man, and is much finer artistically in outline. The mastoid processes are smaller, the zygomatic arches are thinner; the lower maxillary bone is also lighter, more slender, and its posterior angles more attenuated. The skull altogether is lighter; it weighs decidedly less than in man, and this difference is largely due to the fact that the inferior maxillary bone is relatively much lighter than the others. The diameters—antero-posteriorly, transversely, and vertically—show a decided difference in the sexes. While all diameters are smaller than in men, the antero-posterior is relatively longer, while the vertical is shorter. In other words, the cranium of the woman is relatively longer but not so high. This greater relative length of the head in woman is due to the comparatively greater length of the temporal bones.

The vertical diameter of the orbit is greater in woman than in man in proportion to the transverse measurement, hence this cavity more nearly approaches the circumference of a circle, while in man it is oval in outline.

The Muscular System.—Muscles in women are, generally speaking, smaller than in men, in a degree corresponding to the osseous system in women compared with men; yet in this respect their muscular system is relatively not so much inferior to man's; and, so far as quality of muscular fiber is concerned, the muscles of women are quite equal to those of men. One striking similarity of the female sex is the fact that the central or largest portion of the muscles of the thigh is higher up—nearer the pelvis—than in man. This, in connection with the width of the pelvis, gives that tapering of the limb so characteristic of the sex.

The Mammary Glands.—It might be said that the mammary glands are sexual organs peculiar to women. It is true that in

the male these glands are found, but they are so completely rudimentary that they may be looked upon as merely the remnants of embryonic germs that have been left out in the process of development, so that there is really no comparison between the mammary glands in the sexes. In women they give the most striking characteristic appearance, and functionally they are of such importance that they constitute one of the most prominent of sexual differences.

Adipose and Cellular Tissue.—In women the adipose tissue is more distinctly abundant than in men. It is possible also that the cellular tissue is found in greater abundance, and these tissues together have a marked effect in producing the general appearance of women. It gives a far more delicate outline by covering up the muscles and the bones which come nearest the surface, thus giving the subtle outline with graceful curves and general rotundity indicative of delicacy and refinement which contrasts in such a decided degree with the angularities, muscular and bony prominences which distinguish the male and are more indicative of strength than beauty.

The Skin.—In women the skin is finer in texture and lighter in color than in man ; and, owing to the greater abundance of subcutaneous fat, the larger vessels are concealed. This gives a softness, delicacy, and beauty which are characteristic of the hair.

The Hair.—The hair and its distribution over the body differ in a very striking manner in the sex. It is far more abundant in man, not only from his possessing a beard, but also from its growth upon the entire body. In women of the higher races the beard is entirely absent, and the entire body is almost destitute of perceptible hair except on the pubes, where it is quite as abundant in women as in men ; but here also a marked difference prevails : in women the hair of the pubes terminates a little above the mons veneris, whereas in the male it extends up to the umbilicus in the median line.

Thorax and Abdomen.—*The heart and lungs* are relatively smaller than in man. The diaphragm is smaller and has a

greater convexity. The dorsal groove is more pronounced, and the pit of the stomach is higher because the sternum is shorter. The lower end of the sternum corresponds with the level of the seventh dorsal vertebra, while in man it corresponds with that of the eleventh. The cartilage of the sixth rib is articulated with the inferior extremity of the sternum, while in man it is articulated with the inferior edge of that extremity. The abdominal cavity is one inch higher than in man, due mainly to the construction of the lumbar vertebræ. The stomach is smaller, somewhat longer, but not so broad, and its muscular coat thinner than in man.

A line drawn from the inferior extremity of the sternum to the symphysis pubis is parallel to the axis of the body of woman, while in man it converges toward the spinal axis.

In woman the umbilicus is farther from the pubes than from the sternum.

The bust is proportionately longer than man's. The larynx is from one third to one half smaller, its constituent cartilages thinner, the thyroid is flatter, the glottis smaller, and the vocal cords shorter. The voice of woman differs essentially from the voice of man; it is one octave higher, because her larynx is narrower and the hyoid bone is smaller.

Organs of Special Sense.—Whether sex has any influence upon the development of the organs of special sense is still a mooted question, and our knowledge concerning it is still somewhat meager. Experiments with reference to the sense of taste show that this sense is better developed in men than in women.

Quite recently it has been shown that the sense of smell is very much keener in men than in women; much feebler dilutions of delicate odors were detected by men than by women.

What has been discovered about the sense of touch gives thus far the superiority to man.

In color discrimination women are ahead of men (Yale Psychological Laboratory).

In weight discrimination and in quickness of motor ability men surpass women; yet woman's endurance is greater.

Sensitiveness to Pain.—Prof. Cæsar Lombroso, of the University of Turin, Italy, gives women credit for a marked degree of sensory obtuseness. He has made very careful observations, with all the precision that characterizes a scientific student's work, and concludes that women suffer less from pain —both moral and physical—than men, because of their less sensitive organization. He also states his belief that this hypothesis is the only one that can explain the greater longevity of women. He endeavors to strengthen his position by quoting the testimony of surgeons and dentists in England. From these he learned that women allowed themselves to be operated upon with astonishing insensibility; that women underwent dental operations with more resignation and calmness than men, and did not swoon nearly so frequently in the dentist's chair. That he is right to a certain extent must be conceded, but in part, at least, he is wrong. He made his experiments on the sensory nerves of Italian women, and in all probability of the poorer classes. It is a well-known fact that the uneducated, poorer classes of the peasantry in many European countries are less sensitive than men, because they are less developed. It is found that the sensitiveness of the nervous system varies with the degree of culture. The ability to bear pain differs in different classes of women to as great a degree as in the different sexes. Take women destitute of education and they show less sensitiveness. The difference in their ability to bear pain, or to desist from outcry under pain, is greatly increased in the refined and cultivated, who have learned to bear pain. It may be briefly stated that the ignorant and undeveloped are not sensitive, and the highly refined and educated, who have been thoroughly trained in life's duties and have experienced that extra measure of pain to which woman seems to be doomed by reason of her organization and functions, bear pain as if they, too, were less sensitive. They have more fortitude and more patience, but they are, I believe, as sensitive as men.

But granting that the nerves of sensation are less acute

in women than in men as a rule, it does not by any means follow that woman has less moral or mental sensitiveness. Indeed, my belief is the exact reverse. She certainly is quicker to appreciate any mental impression, pleasant or painful. From personal observation, women are apparently more sensitive to the suffering of others than men.

In addition to all the anatomical peculiarities of women, there are in the higher tissues and tissue changes marked differences between the sexes.

To state this in a technical way, it must be said in regard to metabolism, or tissue changes, that women are mainly anabolic, while men are catabolic. By this it may be understood that the tissue changes, so far as disintegration and waste are concerned, proceed more slowly in women, and on this account they have the greater capacity for the storage of force. This may explain the greater tendency of women to the development of adipose tissue. It may also account for the fact that they require more sleep than men and that they bear very much better the loss of sleep and loss of blood. Their recuperative powers are greater, while their general activity in tissue change is somewhat less.

Here, again, do we see the subtle influence of the nerves. Metabolism and all metamorphosis in the economy are controlled by the nerve condition, so that "the faster we live, the faster we die," is but too true.

The brain and nervous system differ from that of the male in many very important particulars, and have been the subject of much discussion. A more detailed account of the characteristics of her organization must necessarily be given in order to make clear what is to follow.

Sir James Crichton-Browne* has outlined in a very masterly and scientific way some of the differences between men and women, especially in regard to the brain. On this I quote the following:

"And first among cerebral differences between the sexes

* Oration delivered before the Medical Society of London, May 2, 1892.

I would refer to mass and weight—qualities with which one almost insensibly associates power and strength. Now, it is a matter of common observation that women have smaller heads than men, and it is a matter of scientific observation that in all peoples and races, without exception, the absolute weight of the entire brain is, on the average, greater in men than in women, though, of course, individual women do sometimes possess larger and heavier brains than individual men."

He gives sixteen hundred brain weights (nine hundred and forty-five male and six hundred and fifty-five female) and states these results: "The brains of males exceeded those of females in weight by 127·68 grammes (or 4·50 ounces) on the average, and, after allowing for differences of stature (taking five feet seven inches as the average male height, and five feet two inches as the average female height), there is still an excess of brain weight of 29·71 grammes (or 1·05 ounce) in favor of the male. This is a very substantial difference, and if we recollect that the brain of the ant—of the mental powers of which Sir John Lubbock has spoken in such complimentary terms, declaring that they differ from those of man not so much in kind as in degree—is of the size of a pin point, we shall realize that an extra ounce of brain matter within the human cranium may imply an enormous mental difference. But it is certain that the actual difference in brain weight between healthy Englishmen and Englishwomen is much more than one ounce." He makes this last statement because his observations were made upon the brains of insane people, and for reasons given, the observations were made favorable to women, and after adducing his proof—which, to say the least, appears to have all possible foundation—he adds: "All available evidence points to the conclusion that the male brain exceeds in weight the female brain in this country to an even greater degree than has hitherto been supposed; and that the smaller size of the female brain is a fundamental sexual distinction not to be accounted for by the hypothesis that environment, educational advantages, and habits of life, acting through a long

series of generations, have stimulated the growth of the cerebrum in one sex more than in the other, is made clear by the fact that the same differences in brain weight between men and women have been found in savage races. And not only is the male brain heavier than that of the female, but it has a wider range of variation in weight. The very big brains and the very small brains are encountered, just as are geniuses and idiots, giants and dwarfs, more frequently among men than women.

"I have said that an extra ounce of brain matter within the cranium might involve an enormous mental difference. It would do this were it generally and equally distributed, and it would do so in a still more striking manner were it localized in a certain region of the cerebrum; and there are grounds for believing that there is a difference in the balance of parts in the male and female brains respectively, and this difference I adduce as the second sexual difference between them. Broca—no mean authority—has declared that the occipital lobes are more voluminous in the female than in the male; and my own observations, published in Brain, in 1880, confirm, as far as they go, his conclusion, and show that while the frontal lobes are equally developed in both sexes, the parietal lobes, corresponding roughly with the motor area of Ferrier, are larger in the male than in the female, and the occipital lobes, certainly sensory in their functions, are larger in the female than the male.

"The third brain difference between the sexes to which I would allude is one of convolutional arrangement which can not yet be accurately defined, but which is revealed by an examination of a series of photographs of brains of men and women that have been stripped of their membranes. The brains of women, like their bodies generally, are upon the whole more symmetrical than those of men. The difference which I have found in the weight of the hemispheres points to this conclusion; for in males the right hemisphere exceeds the left in weight by 3·7 grammes, and in females by only 2·1 grammes; but pathological considerations as to

the regional distribution of wasting in organic diseases forbid me to attach too much importance to this observation, and I prefer to trust to mere ocular inspection, which will, I think, bring home to any one who diligently uses it the superior symmetry of the female brain, due to its comparative poverty in secondary gyri.

"It is in the internal structure of the brain, in the depth and arrangement of its gray matter, in the size, form, and connection of the cortical cells in different areas, that, in all probability, the most essential differences between the male and female brain reside; but the internal structure of the brain in this relation is as yet uninvestigated." He gives his observations on this subject, and in continuation says: "And not only in the frontal region, but in every convolution, the specific gravity of the gray matter was lower in the female than in the male.

"And there is still another—the fourth—brain difference between men and women which I must submit to you, and that a very momentous one—namely, vascular supply. During the last four years Dr. Sydney Martin and I have, as opportunity has offered, carried on an inquiry as to the size of the great arteries that supply the brain. The details of our observations, which have been conducted by Dr. Sydney Martin with scrupulous care and by new methods, insuring, I believe, great accuracy of measurement, will be communicated to the Royal Society when they are complete; but I may mention now one or two of the results at which we have arrived. We have found that the diameters of the internal carotid and vertebral arteries, taken together, are slightly greater in the male than in the female. Their combined diameter is 8·2 millimetres in the male and 8·0 millimetres in the female; but when the difference between the weight of the male and female brain is taken into account, it is found that in proportion to brain weight their diameter is greater in the female than in the male, and so it appears upon the whole that the female brain receives a larger supply of blood in proportion to its mass than does the male brain;

but, of course, it is to be remembered that the blood going to the female brain is poorer in quality than that going to the male brain, and contains only four million five hundred thousand corpuscles in the cubic millimetre, instead of five million in the case of the male. But Dr. Sydney Martin and I have found further that the internal carotid and vertebral arteries, when measured separately, display a marked difference in caliber in male and female brains respectively. In ten male brains of adults free from brain disease, and ranging from twenty-five to thirty-six years of age, the internal carotid arteries had an average diameter of 2·8 millimetres on the right side and 2·75 millimetres on the left side, while the vertebral arteries had a diameter of 2·2 millimetres on the right side and 1·875 millimetres on the left side; whereas in ten female brains of adults free from brain disease, and ranging from twenty-five to forty-three years of age, the internal carotid arteries had an average diameter of 2·6 millimetres on both sides, while the vertebral arteries had an average diameter of 2·3 millimetres on the right side and of 2·075 millimetres on the left side. It thus appears that the distribution of the blood, in the male and female brain respectively, varies to a considerable extent. The internal carotid arteries, with their great branches—the anterior and middle cerebral arteries supplying the supra-orbital convolutions and island of Reil, the gyrus fornicatus, the Rolandic area, the angular gyrus, and the first temporo-sphenoidal lobule—are much larger both absolutely and relatively in the male than in the female brain; but the vertebral arteries which supply the occipital and temporo-sphenoidal lobules are larger in the female than in the male brain, and the basilar artery, which is practically a continuation of the vertebrals, is also larger in the female brain, where its average diameter is 2·8 millimetres, than in the male brain, where its average diameter is 2·675 millimetres. It might be thought that the free anastomosis provided by the circle of Willis renders comparatively unimportant differences of caliber in the internal carotid and vertebral arte-

ries, and must equalize the blood currents to the different regions of the cerebrum; but the fact is that the posterior communicating arteries—which, when dilated after the occurrence of any pathological obstruction on the cardiac side of the circle of Willis, maintain the circulation of the brain in tolerable integrity—are incapable while normal, by their caliber and position, of adjusting the balance between the direct currents of the carotid and vertebral arteries, and it is certain that the result of the difference of the diameter of these in the two sexes which I have recorded is this: that the anterior region of the brain is comparatively more copiously irrigated with blood in men, and the posterior region in women. And vascular supply is in some degree a measure of functional activity, the flow of blood to an organ or part having always a relation to its working power. But the region of the brain which in men is most richly flushed with blood is that which is concerned, we have reason to believe, in volition, cognition, and ideo-motor processes; while the region which in women is most vascular is that which is mainly concerned in sensory functions, and we thus see that there is a relation between the size of the cerebral arteries, and what observation has taught us as to the intellectual and emotional differences of the sexes.

"The structural differences between the male and female brain, which I have briefly referred to, justify the conclusion that they are organs broadly distinguished from each other, and they have to some extent different kinds of work to do; and an inquiry into the functional relations of each with other viscera of the body, did time permit of it, would strongly confirm this view. All through life the male brain differs from the female in capacities, aptitudes, and powers. All through life there must be a lack of complete, unspoken, unformulated sympathy between the two sexes: what is real to woman is fanciful to man; what of moment to her is immaterial to him; a string of detail in woman becomes a wide generalization in man; the affair of the present obstructs past events of importance in woman; in man

the occurrences of yesterday must become the rule for to-morrow. These considerations appeal to all who have to deal with women and their diseases. How infinitely more difficult to discover important symptoms, to diagnosticate conditions, and to direct the great business of cure in woman than in man!"

THE SYMPATHETIC NERVOUS SYSTEM IN WOMEN.

So far as my investigations have been pursued I have been able to find very little in works on anatomy showing any special differentiation between this part of the nervous system in men and women, excepting that the ganglia and the connecting nerve filaments are found in greater abundance and more highly developed in connection with the pelvic organs in women than in men. Especially is this the case in the gravid uterus. I have, however, been led to the conclusion that, on the whole, the sympathetic nervous system is more highly developed in women than in men, from the fact that the sympathetic nervous system is most intimately connected with the process of ultimate nutrition; and since nutrition in relation to the reproductive organs of women is vastly more active and complex, especially during gestation and lactation, it is reasonable to suppose that a higher development of this nervous supply should prevail in women at all times. It is also well established that women recuperate more rapidly than men; their reproduction of blood after hæmorrhage is certainly more rapid than it is in men; and after exhaustion they are much sooner restored to their former standard. Again, nutrition is maintained with greater activity to an advanced age in women than in men. This possibly may be due in part to a superiority of the sympathetic system. While this is not the only explanation of the fact that women are longer lived than men, it may be one item which adds to the greater prolongation of life in women.

Old observers were certainly profound when they denominated this "the sympathetic system." And the whole realm

of medicine seems to prove the higher organization of these nerves in women than in men.

Women oftener have a complication of diseases: a number of organs—interconnected—all undergoing similar or allied pathological changes. Women also have a larger number of symptoms indicative of the existence of the same morbid state than men have; and these symptoms I have found to appear in a most widely extensive area. Chiefly is this noticeable in neuralgic, gouty, rheumatic, and fibroid diatheses.

CHAPTER VI.

GENERAL FUNCTIONAL CHARACTERISTICS OF THE SEXES.

In summing up what has been said of the differences, mental and physical, between the sexes, it may be stated in general terms that the great *structural* characteristics are found in the sexual organs. The anatomy and physiology of the sexual organs of women are so fully discussed in works upon those subjects that it is unnecessary to do more than mention the fact. In all other respects there are no essential differences in the principles of structure in men and women. The differences that have been pointed out are simply modifications, which are adaptations to the requirements of sex. All the functions of the body are alike in character, and differ only in degree of power and activity; and even there the difference is so slight as to be unworthy of much serious attention. It is again in the function of reproduction that the appreciable difference is noted.

In regard to the brain and nervous system—the subject of much discussion—the fact is that all the essential factors, the manifestations of which we call mind, exhibit no difference in the sexes save in degree. The anatomists are compelled to concede that the structure and function of woman's brain are the same as man's. True, hers is a trifle smaller and somewhat less in capacity.

So far as the intellectual and moral characteristics are concerned, the most unreasonable opponents can only claim that woman possesses these to a lesser degree than man, but is not at all destitute of those mental qualities. There is not a function of the brain that is manifested by man that

is not also performed by woman. There is no essential mental element wanting in woman as a member of the race. She is second to man in originality of thought, will, judgment, and reason. In all that relates to the reproduction of the species she is mentally and physically superior, and is really the highest type of the race. She is less original, but is more active, imitative, and in many respects more executive and responsive.

MENTAL CHARACTERISTICS OF WOMAN.

These anatomical peculiarities which have been briefly outlined lead us to expect mental peculiarities such as are manifested by intellectuality and disposition, and we find, as expected, that the mental characteristics are not only well defined, but offer a marked contrast with that of the male. Her physical organization is not fully developed, and that is why she is said to be more like a child in disposition and also anatomically. The harmony between structure and function obtains in woman as well as all through the animal kingdom. It has been stated in a general way that women are less intellectual than men, less original in thought, less capable of continuity and logic of thought, and hence they have been called more childlike in their mental characteristics, and in this respect resemble rather the primitive races. The difference in early life is not marked, boys and girls being more nearly identical in their brain action until the period of puberty; in fact, at this time girls surpass boys in the acquisition of knowledge, and show a mental activity and acuteness that are superior. After puberty woman does not keep pace with the companion of her youth in this regard; her mental growth becomes slower and more limited. After the menopause there is an apparent tendency to become in her mental qualities more like the male.

The *perceptive faculty* is superior in acuteness and rapidity, and women acquire knowledge quicker, think more rapidly, and remember better. *Intuition*, so far as it relates to human affairs, is remarkably developed in women. *Pas-*

siveness is also a marked feature, and out of this grows perhaps their marked mental *adaptability.* It is well known that women adapt themselves to the changing circumstances and to their environments far better and sooner than men; in other words, they soon adjust themselves to any new order of things, whether the change of environments be for better or for worse. They are much less pugnacious, and on that account far less able to meet and overcome opposition or resistance by force in whatever form they may be presented. Allied to this characteristic is her *dependence.* We often hear the common expression that "woman is of a clinging nature," which is but another way of expressing her dependence upon those who are her natural protectors; and, beyond this, her reliance upon the Omnipotent accounts for her greater religious disposition. Some of the modern psychologists adopt the hypothesis that every being has two minds—an objective and a subjective mind. If this is the fact, then it appears that the objective mind is the strongest in man, while the subjective is equal or superior in woman.

FIG. 1.—Adam and Eve, by J. Massey Rhind, sculptor.

She is less egotistical, so far as the unpleasant acceptation of this word goes, but far more of an egoist than man, since

she is a law unto herself, and whatever differs from her experience is the unreal, the new, the strange.

A woman may feel she is wrong, but can not easily say so in words. Woman has less pride than man and more vanity; hence she is a partisan, a fact most men should be devoutly thankful for.

Fig. 1 illustrates in art the sexual characteristics described in the foregoing chapter. Mr. Rhind, the distinguished sculptor, has given material expression to the difference in form, size, and character of tissue, and the consequent difference in the mental characteristics. The broad shoulders, large bones, and muscles of the man, indicate strength to struggle for existence, and his courageous, self-reliant expression is indicative of a corresponding mental organization.

The wide pelvis, large bust, smooth, round, delicate limbs of the woman show a refinement of structure adapted to her environment. Her gentle, timid, affectionate expression tells the story of her mental character, disposition, and functions in life.

SEXUAL INSTINCT IN WOMAN.

The sexual instinct is born at puberty. Puberty simply means the completion of the development of the sexual organs, through which they attain a condition which renders them competent to perform their intended functions.

The sexual organs descend into the true pelvis, and the uterus, while it increases in size, is changed in form from the infantile to the adolescent, mature uterus. It is during this time that *all* sexual characteristics which have been discussed before assert themselves and become apparent, but chiefly the sexual instinct. This feeling is not nearly as strong in woman as in man. Indeed, many women, before marriage, are absolutely destitute of sexual appetence.

This desire is apt to be less strong in the coquettish woman than in the naturally modest. After careful observation of the sexes in the married state it is found that sexual appetence is less in women than in men. Strong sexual in-

stinct is no assurance of fertility, as barren women may be possessed of it. Indeed, from the history of a great number of noted coquettes—French chiefly, and here is a nation unsparingly, unblushingly self-scrutinizing, self-critical—I am sure the reverse is true, namely, that barrenness is oftenest associated with a strong female sexual appetence.

Menstruation lessens this feeling, but immediately before the flow the appetence is great, and immediately after its cessation at its maximum. It is also much more diminished during lactation than during the first six months of pregnancy.

The rule is, also, that the appetence diminishes as the menopause is approached, but there are occasionally striking exceptions which are temporary or spasmodic, and under certain circumstances very unfortunate. Many women marry in whom the sexual instinct is absent, or very weak, influenced perhaps by social custom or from a desire to be independent, or from Platonic affection, and it is believed that this deficiency is hereditary, as noted in their offspring.

While in the primitive races men and women were polygamous, woman has been at all times monogamous in disposition. And this monogamous instinct at once, to my mind, elevates the quality of woman's thought or character above that in the realm of the brute creation, places her as man's superior from the ethical point of view, and makes the desire of equality of sexes far more necessary for man's advancement than for her own. Man is still polygamous in disposition, though less so than in past ages, while to-day the general average of woman's sexual instinct is below that of former times.

Woman's superior virtue, purity, and refinement lie at the foundation, I presume, of her faithfulness and devotion to all her social duties.

CHAPTER VII.

WOMAN'S FUNCTIONS IN LIFE.

A CAREFUL study of woman's organization, so far as her physical and mental structures are understood, enables one to predict her functions, or her sphere of activities and usefulness, in this life. A further clew to her capabilities may be found in observing what she has been in the past. Careful consideration of those occupations into which she naturally drifted by reason of her organization, and of the reason for her existence, forms a basis upon which we can construct her present line of action and duties. This is the only scientific way by which the subject can be approached with any hope of arriving at correct conclusions.

In the many discussions of this subject which have arisen in recent times, the incentives seem to have been based upon what woman herself desires to be, guided by her paramount ambition, and, on the other hand, what men prefer that she should be and should do. The only way to secure for woman those rights and privileges which alone can secure for her all prosperity, and enable her to become in the highest degree useful in life, is first to learn what she is capable of doing and how far she is capable of advancement by education and culture, so as to enable her better to perform duties that are assigned to her in the present order of things, and to qualify her for taking the higher stand and engaging in different lines of thought and action. This appears to me as the only true way in which to seek for her elevation and advancement. When her natural position in this life with all her capabilities, duties, and offices shall be

defined, the way to adjust her claims will certainly become clearer and far more likely to be accomplished. As progress is made in this branch of study it may appear that certain fields of action may be broadened and extended: in other directions they may be contracted; and it may possibly come to be known that instead of changing her functions or adding to them to any great extent, the greatest need may be to qualify her more fully for her present occupations. In the past, present, and future her first and most important functions relate to the reproduction of the species, and in this she is and ever must be a superior type of the race. In all that pertains to the position of wife, mother, and the creator of home, and in the potential forces maintaining it, she is conceded to be supreme—the only one of the human family intended for such a position and capable of fulfilling it. These offices are so well understood by all who are capable of thinking rationally that we need not dwell upon this part of the subject. We may say, however, that the management of children and young people of both sexes, up to the time when they become independent of parents, is better accomplished by woman than man. Is there any room for question, then, as to who ranks the higher in the world—man or woman? While scientists show that men possess a little more brain, or are larger physically, and present certain characteristics which we call manly, meaning by that, capability of certain vigorous, persistent, coarse achievements, that man possesses more originality, and hence is a greater producer in the way of thought and action than woman, is not that more than counterbalanced, or is it not certainly equaled, by the yet higher office of woman in producing men and women? To be the mother of a worthy son or daughter is surely as high an honor as to be the father of a new law, a new theory in science, or a new system of tactics and strategy in warfare.

Married, family life, with its duties and cares, is, no doubt, sufficient to absorb most of the time and capacities of women of average ability, yet there are many avenues of

thought and action leading out from the home life, and those who are best qualified for home life do most outside its limits. Much of the best work that has been done in the world has been done by married women who have raised families. Their legitimate or most important responsibilities and duties have not by any means been neglected because of their activities in other fields. In literature woman has taken a very high position. We might give many names and their works to show this, but to those who are at all versed in the literature of the present time this is unnecessary. We hear considerable said about how little women have done in literature compared with what has been done by men; that they have created but little, and those who have become distinguished were simply exceptions to the rule. This no doubt is true, but the exceptions have been so many and so important that they sufficiently prove women's ability in this field of intellectual labor, and while there have been but few who have become distinguished, the number has been sufficient to lead any one to believe that they are capable through education and culture of even vastly greater deeds in this direction. In the fine arts, too, enough has been accomplished to show that women, while less creative, are more quick to imitate, and well qualified in execution. While the distinguished painters and sculptors are few, a sufficient number have attained eminence to show that they are capable of great things, and, what is more, by proper qualification they can be made artists of a very high order.

Women's powers of observation, of making nice and subtle distinctions, are far greater than men's, and in art life they are apter pupils; they know quicker than men when they go wrong, or strike the false note. But they stop, finally, and men do not, on the upward road to perfection—at least what we are pleased to call perfection. And although they may ever remain inferior to the greatest of men, there is no doubt that they are capable of becoming superior to the lesser lights among the male artists. Again, in regard to music, it has been said that woman has only succeeded in proving her inferiority.

Rubinstein and other authorities in music have declared that women have no creative power in this art. This has been so often reiterated that some of the scientists have endeavored to offer explanations of this so-called fact. It has been claimed that women have not exercised, and can not exercise, any great creative power in music. In proof of this it is said that they have had better chances than boys in obtaining a musical education. If there is a branch of education in which girls have been schooled to the neglect of every other it is precisely that of music, so says an author in the London Lancet. He also goes on to say that this is the first subject to which she is put in beginning her education, and among the very last she is allowed to discontinue ; that she is drilled daily in piano-playing, while singing lessons are given in the great majority of cases. From this it is inferred that if education and practice can develop her capabilities, she should have excelled all male competitors in this department of education. Considering the time given to this branch of education, her failure to evolve new harmonies or even new melodies is one of the most extraordinary enigmas in the history of the fine arts. Certainly this would be very extraordinary were it true. And it is further stated that among the distinguished writers—as Lady Eastlake in her celebrated essay on music, and by such keen psychological analysts as Mr. J. H. Lewes, in his Life of Goethe—it is indeed a problem still demanding solution.

This is certainly an unfair statement of woman's relations to music. While it is true that we have not had a great many composers, there certainly has been a very large number of celebrated performers and singers. We assuredly have at the present day among our musical artists as many celebrated singers among women as among men. I doubt whether any male singer has ever achieved the reputation—as acknowledged by artists—of Madame Patti. That there have not been many great composers is true, but that only goes to show that at this stage of woman's mental evolution she has not yet advanced as far as man. Or may it not be

that while she is taught early in life to play and sing, she is taught *only* to play and sing by those who are unable to impart the higher branches of a musical education than this? Men start out to learn composition under teachers avowedly masters in developing musicians in the higher sense. The composer requires to be more than a musician; he has to be as much a creator as the writer of fiction or poetry. We certainly have had a sufficient number of women composers of music—distinguished ones at that—to show us that the germs are there and simply want higher cultivation. Among these might be mentioned Miss G. A. Becket, Pauline Thys, the Princess of Saxe, Amalia, Princess of Prussia, Miss Bedumesnil, Maria Paradies, Julietta Folville, Mrs. F. Jungmann, Ursula Asperi, Lucille Diaz, Amelie J. Candeille, Cecilie Camiade, Elisa Ziliotte, Mrs. de la Guerre, Amelie Perenet, Mrs. Sainte Croix, Maria Agnesi, Baroness de Maistre, Donna Casella, Viscountess Grandval, Miss Guenin, Alma Rouch, Hermine Dejazet, Elizabeth Boyd, Mary A. V. Gabriel, Marchioness Perrier Pilte, Teresa Seneka, Giulia Tirindelli, Mrs. Paigne, Duchess of Weimar, Louisa A. Bertin, Carolina Uccelli, Miss Collinet, Mrs. Louis, Miss Duvall, Miss Roche-Jagu, Delphine B. Ugaldi, Mrs. Gottenhofer, Augusta M. A. Holmes, Miss Wulet, Miss Caroline Eugénie Sourget, Margherite Grimani, Johanna Kinkel, Helena Munklett, Karoline Wisender, Suzanne Lajier, Mrs. Walpurga, Pauline Viardot-Garcia, Louise Henriette Viardot, Florine Dezede, Mrs. de Gail, Miss Rivay, Lucille Gretry, Mrs. Sabatier-Blot, Antoinette Biagoli, Loisa Puget, Miss de Kerkado, Ann S. Mounsey, Elise Schmetzer, Mrs. H. de Vismes, Miss Dell' Acqua, Adolfa Galleni, Augusta Tennstedt, Miss Stuart Stressa, Teresa Guidi-Livnetti, Margherite Olagnier, Mrs. de Sablons, Carolina Ferrari, Mrs. de Reynac, Christine Morrison, and Mrs. A. N. Serow. These women are said to have written one hundred and fifty-three works of an average of two acts each.

All this simply shows that women, while they have not, in these departments, attained an equal standing with men,

have given complete evidence that, with time, education, and culture, they can do great work.

But to-day there is a very large class of women who, either from choice, necessity, or compulsion, are not permitted to occupy the position which they were originally destined for —I mean that large class of women who remain unmarried and hence have no opportunity of exercising their highest functions. Such must be provided for, and first of all not only those who are dependent upon their own exertions for support, but those who are provided for, yet must, if they would live natural and healthful lives, find occupation of some kind. Women in the present state of society are well qualified to engage in commercial pursuits and in the mechanical arts and industries; the more fortunate who have obtained a better education are quite competent to engage in literary labors and in all the arts, and they are qualified for teachers, especially of the young of both sexes and of girls of more mature age; in fact, the better class of women are infinitely better prepared than the inferior class of men to engage in nearly all occupations. There are a few doors that still remain closed against them, and with some reason, the legal and clerical professions most notably; yet I learn from very recent and good authority that there are fifteen or twenty regularly ordained women preachers.

While it has been said that women are by nature not qualified to enter the so-called learned professions, I am inclined to believe that they are so only because they have not had the higher education which is necessary to prepare those who would practice law, medicine, or theology. In some of the rougher occupations they are entirely unqualified to engage, and I do not believe that it is possible by any education or culture to make them ever capable of engaging in them. Take military matters, for example, and others less objectionable to the female mind and organization, such as a mariner's life, exploration, and others which entail a great deal of hardship.

Yet many women delight in accompanying expeditions,

either to Africa or to the polar regions, that are dangerous; and they stand hardship well and are most sympathetic companions.

While it is possible that women may in time become equal to men in their ability to grapple with science and to practice the professions of law and medicine, I believe that they require to be much modified by education in order to make such occupations either successful with or agreeable to them; and again it appears that the ultimate result of an education and training that would produce those qualifications must so modify the whole character of woman as to probably render her less competent for her higher offices in life. In fact, I doubt if such women are the kind that men would like to have or the kind that women would like to be. This, however, is merely my own opinion based upon some thought and observation, and I am possibly wrong. The only way that that problem can be solved with certainty and with justice to woman is to give her every opportunity to try. If woman is really incompetent in this direction, she will be among the first to discover it, and will abandon such pursuits for those that are more congenial; but the experiment should be tried—in fact, is being tried in most of the civilized nations of the earth at the present time.

The medical profession has shown, in this country at least, a disposition to admit women to its ranks and to offer opportunities for obtaining professional educations; the same to a more limited extent applies to the law. The theologians are the only ones who with few exceptions oppose the admission of women to their ranks; this is most extraordinary, for while there is a reasonable doubt as to women being qualified to become scientists, doctors of medicine, or members of the bar, they are certainly in their nature more religious than men, and by their mental organization quite as competent to comprehend theology, morals, and ethics, and also to preach the Gospel. Viewing the matter from the standpoint of the doctor of medicine, and basing the arguments

upon the structure and function of women, they can be pronounced capable of occupying the highest position in the Church, and in fact I believe that to-day they do the most valuable portion of church work, and far outrank men in performance of religious duties in every way, except that they are not permitted to preach or to receive remuneration for what they do.

CHAPTER VIII.

NATURAL AND SEXUAL SELECTION.

Natural selection (which I understand to be the natural tendency of all living beings to seek the environment which is most agreeable or best suited to them) is active in modifying character. That living beings are endowed with the power to seek for such surroundings as they may require is well known, and is of much importance in the life of all. It does not follow, however, that among the higher species the best environment is always sought; hence observers can see that mal-environment, the result of perverted natural selection, has its unfavorable effect, and this affords veritable proof of the power of natural selection in developing the peculiarities of sex. While it is, perhaps, the least important and the most limited in influence, it is when misdirected capable of working much evil. While the lower animals act out to the limit of their natural inclinations in natural selection and with a great advantage to themselves, it is among the human race that we see the most striking evidences of the effect of the law by observing the frequent baneful effects of its violation.

Natural selection is actively at work in producing the characters which enable animals to live, but it has also some effect in developing characteristics of sex.

The discussion of sexual selection involves that of every structural and functional attribute which favors reproduction. Woman is the less qualified of the two sexes to exercise sexual selection. Sexual instinct, as already stated, is less developed in woman. In sexual selection the male

seeks the female, and all his attributes qualify him for the struggle for the female. The female attracts, and her characteristics are manifested in attractive features. He has strength and courage; she has beauty. The exercise of sexual selection plays a very important part in evolving sexual characteristics. When woman fails to develop attractive qualities she is less likely to have a chance to reproduce her kind, and this gives opportunity to those who do have the requirements for sexual selection to survive in their offspring. While man is qualified to seek, win, and defend the woman after having won her, his ability and adaptation to this end are evolved from sexual selection, which derived its primary impetus from his sex. Woman, on the other hand, derives her characteristics from her maternal instinct, which is her dominating mental characteristic, and which is the prime factor in her sexual selection.

Some evidence regarding the causative relations of sexual selection to characteristics is found in the fact that structure does not favor reproduction, although it may enable one to exercise natural selection. The opposite of this obtains, as seen in the fact that sexual organs and sexual selection are not all-sufficient, nor do they aid in maintaining individual life.

This is still more evident from the experiment of changing the process of sexual selection, a thing that is often done in modern times. The result is that men are made effeminate, and women become masculine in their characteristics. The perversion of this natural law shows the power that it wields in the production of sex by its very perversion in our time.

Environment.—The surroundings have a most marked effect in the development of secondary sexual characteristics. They act directly on organization, while heredity is indirect in its action. Environment is most important and potential in acting upon the mind. Natural selection places the beings in their proper place in the world, and the conditions of life existing in the environments have a marked influence in guiding development and growth and in maintaining

health. Environments may be either favorable or unfavorable, and the effects or products will be in accordance with the adaptability or adaptation of environment and organization. This covers the ground in a general way, but it is also essential to keep in mind that normal environments, while fully answering the requirements of one sex, may, to a degree, be unfavorable for the other. It follows that there must be some modification of environment according to the sex in order to effect the highest results. That which is adapted to the race in general will not be altogether suited to both sexes alike. Provision should be made for the sexes in the environment in order to have the best results in the development, maintenance, and reproduction of the race. Environment is to some extent under the control of the human race. Parents may choose the surroundings of their children—in fact, to a certain extent, do create such environment—and men and women can effect the same thing for themselves. Heredity and instinct direct natural selection, so that each organization naturally seeks its proper environment, but the mature can aid the young in its selection and maintenance in it. Throughout life each being has, to some extent, this matter of environment under his own control. Personal responsibility enters here to a large degree in choosing and keeping in an agreeable environment. It follows also that mal-environment may be chosen by perverted will, or from errors of judgment arising from ignorance or vice. This may be clearly understood by comparing man's relations to environment and heredity. The former has a prevailing influence through life, and is under his own control to some extent; the latter is limited to embryonic evolution, and not at all under the influence of the individual, and it is, to a limited extent (and indirectly), under the control of the preceding generation. In its active part in the evolution of sex, environment is manifested by woman's devoting a large share of her life to reproduction and care of the young. The performance of these functions removes her from out-of-door life and the struggle for existence. This mode of life re-

quires the tenderness of feeling, sympathy, devotion, patience, and unselfishness that are pre-eminent among her mental characteristics. Sometimes she fails to develop the strength, energy, courage, and originality of man. The attributes of woman are, according to the highest authorities, evolved through the influence of environments.

In the primitive races men and women are nearly alike, while among civilized peoples the differences that are so marked are clearly evolved through environment. Education, which works such great changes, is a part of environment, and thus plays an exceedingly important *rôle* in evolution, which fits or unfits woman for her functions, preparing her for her sphere in life when her education is of the right character, and unfitting her when based upon false principles, or when unwisely carried out.

And now, concerning education as a constituent, integral part of environment, it remains indisputable that while rational education gives higher qualifications for woman in her offices in life, mal-education deprives her of much of her power. In this country the higher education of girls, while enabling them to enter into competition with men in all occupations, has rendered them less qualified for maternal duties. According to my observation, fewer women in prosperity—among the educated classes—marry, bear children and raise them than formerly, and this I attribute (and correctly, I trust) to improper education or mal-environment, which has rendered them less willing to accept their sexual duties, and less capable of performing them *when* accepted. I must not be understood as opposing the education of women, but rather as objecting to faulty environment, which easily includes mal-education. The poorer classes who have to work in the fields and develop the muscular and osseous systems at the expense of the brain and nervous system show a derangement from improper environment. This class, also, is rendered less capable of performing the maternal functions. Among them delayed puberty and imperfect menstruation are often found. Those who escape this suffer much when

they bear children. There is a prevailing opinion that the primitive races bear children with greater facility and safety than civilized. This may be so, but I am confident, from personal observation and from consultation with obstetricians of large experience, that the women who are overmuscular, such as field workers, are poorly qualified for the functions of maternity.

These considerations are important in studying the development, health, and causative factors of diseases in women, and their influence is constantly at work for good or evil.

CHAPTER IX.

PECULIARITIES IN THE DISEASES OF WOMEN GROWING OUT OF SEXUAL CHARACTERISTICS.

To certain diseases woman has a greater predisposition than man. The higher development of the sexual organs and their greater and more varied functional activity both render her liable to many diseases which, in the nature of things, are impossible in man, and yet with all this it is found that by reason of her recuperative power and the fact that she enjoys in a marked degree a certain immunity from many affections, she is longer-lived—statistics prove this—although she is doubtless doomed to more suffering in life. This law holds good in relation to sexes of the lower animals, and also in plants. Although man is possessed of greater physical strength, woman endures the longer, and will bear pain and suffering when the stronger sex would succumb. This difference is observed in early life ; more boys die than girls, and Dr. Ough claims that from two to six per cent more boys are born than girls, and there are about six per cent more women in the living population. This is because the mortality among boys and men is far greater than among girls and women. More men die of zymotic diseases than women ; in fact, the mortality among women is less in zymotic, diathetic, and all such diseases, except phthisis pulmonalis, cancer, peritonitis, diphtheria, and gallstones.

In regard to diseases of the nervous system the differences observed in the sexes are remarkable. Women have always been called more nervous than men, and this is true to the extent that they are far more liable to functional dis-

eases of the nervous system, and on account of their greater liability to contract bodily habits they suffer more from the infective neuroses. This undoubtedly comes from the fact, already stated, that women are more highly emotional than men, of more active if not broader imagination, are more imitative, and naturally more craving for sympathy. Hysteria is included in the functional disorders of the nervous system, and in many cases is induced by contagion. This tendency to contract nervous affections by association with others similarly affected is to some extent carried into mental diseases, for it is observed that women are more injuriously affected by companionship with the insane than men. Women, however, are less liable to organic diseases of the nervous system than men. It has been clearly set forth that there is a greater variety of organic diseases among men, especially in those cases where marked and grave anatomical lesions occur. This coincides with the facts described in regard to mental and nervous conditions that are observed among men in the way of extremes, for we know that geniuses and idiots are more frequently found among males. This has been stated in another way by one authority, who says that more men than women become insane; while another—and I think the more accurate observer of the two—says that more women become insane, but a large proportion of cases are purely functional forms of insanity, while more men *die* insane of organic diseases of the brain, and that in them insanity is more frequently complicated with organic diseases.

With reference to the circulatory system, purpura is said to be more common among men than women; but this is more than counterbalanced by the fact that women suffer far more frequently from chlorosis—in fact, chlorosis among men is exceedingly rare, while it is very common among women; and if we adopt the definition I have already quoted from Virchow men never can have chlorosis. Carefully prepared statistical reports show that the following maladies occur oftener in males than in females: Acute anterior poliomyelitis (4

to 3), locomotor ataxia (10 to 1), ataxic paraplegia, hereditary ataxy (35 to 30), progressive muscular atrophy (3 to 1), pseudo-hypertrophic muscular paralysis (4 to 1), hæmatoma of the dura mater (3 to 1), acute cerebral meningitis, hydrocephalus, epidemic cerebro-spinal meningitis (149 to 106), cerebral hæmorrhage, cerebral abscess, infantile hemiplegia, and until the fiftieth year of life intracranial tumors.

The following functional nervous diseases are more frequent in males than females: Tetany (7 to 6), laryngismus stridulus (34 to 14), writer's cramp (5 to 1), angina pectoris, infantile convulsions, hypochondria and saltatoric spasms, while these are met with oftener in women than in men; habit spasm, spasmodic torticollis, epilepsy (6 to 5), neuralgia, migraine, exophthalmic goître (5 to 1), chorea (3 to 1), and hysteria.

Males and females are affected equally frequently with primary spastic paralysis, infantile meningeal hæmorrhage, and cerebral embolism.

CHAPTER X.

GENERAL THERAPEUTIC AGENTS EMPLOYED IN THE PRACTICE OF GYNECOLOGY.

Before proceeding with the consideration of those diseases which occur in the active or middle period of woman's life, it is most essential to give a somewhat detailed account of those therapeutic agents that are not medicinal, chief among which stand hydrotherapy, the Turkish bath, massage, gymnastic and other movements, and electricity.

The description will be limited to the valuation of them in their adaptation and adaptability to the therapeutics of gynecology.

It will be found much more convenient to obtain here a general notion of these agents, so that any mere subsequent reference to the name may suffice for its complete recall and comprehension.

HYDROTHERAPY.

Hydropathic treatment has come into great prominence of late years, and deservedly so. Its value in the treatment of fevers and many other affections has long been known, but its use in the treatment of diseases of the nervous system is of somewhat more recent date. The hygienic use of water is, of course, familiar to all, and has been referred to already in relation to the management of the young as an aid to development and growth. I have now to consider it therapeutically in relation to the management of the nutritive and nervvous systems. It is necessary to keep in mind the various remedial effects which can be produced by the use of water in the form of baths and douches and the like.

The immediate and direct effect of almost all forms of baths is a certain impact or shock to the cutaneous nervous system. Remembering the highly organized structure of the skin and its extensive and abundant nerve supply, it is easy to see how readily a strong impression can be made on the whole organization by direct applications to the skin. The effects of water, of course, vary according to the temperature and mode of application. The chief effects are, first, the stimulating or sedative effect upon the cutaneous nerves, and the secondary effect upon the nerve centers, which may be either tonic or sedative, according to the use of the agent. Action and reaction are both obtained. Mild stimulation is sometimes followed by sedation, while a sedative effect may be followed by an active reaction. The effect upon the circulation is of the same order. The equalization of the circulation may be obtained either by the primary effect of a warm bath, which will stimulate the capillary circulation and invite the blood from the deeper structures, or the colder bath, which may have just the opposite effect, in first lowering the circulation on the surface, increasing the heart action, and driving the blood to the deeper structures, while the reaction produces a secondary effect, the direct opposite of the primary. This modification of the circulation is not confined to the mere mechanical heart action, but in its ultimate effect favors, it is claimed, the blood-making process. It is probable, however, that this is accomplished directly through its tonic effect upon the circulation and innervation. The temperature can be reduced, as is well known, by the judicious use of water. For a long time it has been known that the application of cold in the form of water or ice lowered the temperature, but this is often dangerous. A like result can be obtained by the use of the warm or tepid bath in the form of the pack or the ordinary bath.

The first indication in the treatment of neurasthenia and other nervous affections is to obtain the quieting or sedative effect of the bath. This can be accomplished by the use of the warm or hot pack at the time when the patient is too

irritable or weak to endure the fatigue of an ordinary bath. In order to induce sleep the best time for the bath is just before retiring for the night, and before taking the final dose of medicine or the nourishment which may be necessary. In those who complain of itching, irritation, and unpleasant feelings of the skin, with muscular twitchings, a bath answers very well. There are some, however, who become so excited and nervous by the use of the bath that it drives away the tendency to sleep; in such cases the bath should be used in the early part of the day. After the bath a brisk or gentle rubbing, according to the toleration and sensitiveness of the patient, is in order; and if this does not produce the desired quieting effect I have had the patient rubbed with the following inunction: Chloral hydrate and camphor, each one drachm; cold cream (ungt., aquæ rosæ), four ounces. The method of giving the bath is as follows:

The patient is carefully and thoroughly enveloped in a heavy woolen blanket wrung out of water at a temperature of say 110°; over this in the same manner she is enveloped in another but dry blanket, and then again in a rubber sheet. The duration of this process may be from one half to two hours.

The superficial vessels of the skin are at once dilated by the vapor that envelops the entire body in this process, and the cutaneous functions are excited to the highest degree. The great central viscera are relieved of pressure, the capillary tension is diminished, and a general bodily relaxation ensues.

After the patient has improved sufficiently to endure the tonic effect of the bath at a lower temperature I employ the following:

A coarse linen sheet, or other linen cloth of ample dimensions, is dipped in water at a temperature, say, from 70° to 50°, as the case may require, preferably beginning with the higher temperature and gradually reaching the lower. In this sheet the patient is enveloped (the head also being covered with a wet napkin or towel), and then wrapped in a dry

blanket, as in the former case. Cutaneous constriction endures but a moment, and then is very rapidly followed by a flux of blood to the entire surface, yet not much heat can be given off because of the surrounding blanket.

Perspiration is not so likely to be induced by this as by the warm bath.

This form of bath is a tonic and aids the general restorative treatment in a marked degree. Dr. Baruch, whom I look upon as the highest authority in New York on this subject, calls attention to its tonic restorative effects as follows: "Heightened functional activity in the nervous and muscular systems, and consequently increased nutrition and tissue change; quiescence and subsequent equalization of temperature; removal of fatigue products; reduction of functional nerve activity; preparation in nerve and muscle for recuperative doings, for, says Ranke, it is chiefly during (comparative) inactivity that muscle and nerve receive nutritive elements."

So far I have said nothing about the Turkish bath, and for the reason that I have generally looked upon the Turkish bath as more of a hygienic agent, useful in the treatment of lithæmia and excrementitious plethora, rheumatic affections, and so on. Again, neurasthenic patients seldom bear the Turkish bath well if they are markedly affected. I might also refer here to the shower, douche, and needle baths, which are so efficacious in the treatment of hysteria. They are seldom called for in the management of neurasthenia unless complicated with hysteria. I mention these matters in this connection because, in order to obtain the real benefit of hydropathy, one must not only comprehend the physiological and therapeutic effect of hydropathy, but be able to select appropriate treatment in certain affections.

THE TURKISH BATH.

The Turkish bath, so called, is by many regarded as an auxiliary measure to hydrotherapy, which we have just described. My experience has been that it is a hygienic

agent rather than a therapeutic measure. Questions are far more frequently put to me regarding taking the Turkish bath as a sanitary luxury than I advise it in the treatment of any disease of women. Yet those whose powers of elimination are sluggish, or whose skins are inactive, feel better for an occasional Turkish bath, and appear to derive decided benefit from it in the winter months.

Upon the sudden advent of cold weather, as we usually have it in this country, and that, too, after a long and hot season, the system must be shocked by and suffer from the sudden suppression of accustomed perspiration; and this change and consequent danger to the kidneys the Turkish bath combats. When taken for such climatic reasons it may be abandoned in midwinter to be resumed in the spring, when it has seemed to me to be an excellent way of preparing for the torrid heat that is an accompaniment of American summers, at least in this part of the country.

Some can take this form of bath all the year round and be the better for it, when others would be weakened, or the constant subjects of bronchitis and colds. And neurasthenic patients have complained to me of headache, faintness, fatigue, and irritability following it.

When hysteria appears in those of the phlegmatic temperament—in the *apathiques*—I have often prescribed the Turkish bath with good results. Those who are stout and whose skin functions are not well performed are the most benefited thereby. The reflex action upon the peripheral nerves is in these cases excellent, and tissue metamorphosis is increased.

The therapeutic value of the Turkish bath would, compared with other forms of hydrotherapy, be much enhanced were there an improved technique and environment. As usually given, there are many objections to the Turkish bath, and some dangers that should be guarded against.

First, the necessary enforced restriction of ventilation oftentimes diminishes the amount of benefit that might have been obtained, especially in cases where oxygenation

is imperative — plethora, gout, rheumatism, diabetes, and obesity.

Unless great care is taken on the part of the director and attendants at the bath, exposure to contagious and infectious diseases is certain. My attention was forcibly called to this matter a number of years ago. I ordered massage for one of my patients, and she employed the attendant from the Turkish bath. When this manipulator had finished treatment the lady directed her to the toilet room to wash her hands; to her surprise, the *masseuse* declined to wash her hands, saying that it was not worth the trouble, as she was going to give massage to another case. This led me to investigate the subject, and I found that while every attention was given to cleanliness, as a housekeeper or laundress understands the meaning of the term, there were no efforts made to guard against sepsis or contagious diseases. These were the facts in regard to the establishments that I investigated: towels were provided, but that they had been sterilized was not known. The scrubbing brushes were not cleansed or disinfected after use. Some patrons of the bath take their own brushes, but only a very few do so, and that only recently. The attendants sometimes, not always, wash their hands after treating each visitor, but I saw none who made any effort to disinfect or sterilize their hands. The blankets in which patients recline after the bath are used over and over again. The clean and the unclean meet in the dressing and hot rooms and in the manipulating rooms, where there is every opportunity to exchange compliments in the form of disease germs. The danger is apparent when it is borne in mind that those who patronize the Turkish bath establishments are often diseased, or come from homes where contagious diseases prevail. Extreme care, it is clearly evident, must be taken in order to make this form of bath a safe agent. Indeed, in baths frequented by the general public it is almost impossible to insure perfect safety. A fair degree of security could be obtained by treating every bath as an important surgical operation, and taking all aseptic and antiseptic precautions

that the surgeon and obstetrician take in their practice. This would not only require cleanliness of the rooms, appliances, and attendants in the bath, but also a disinfection of the patients and clothing of all who come from where there are contagions and infections.

There should be a room where contaminated patients could be received, where they could completely undress and be thoroughly disinfected by liberal scrubbing in soap and water, and, in a word, treat the whole body as a surgeon prepares his hands before an operation.

Meantime the patient's clothing should be thoroughly disinfected in an appropriate sterilizing room. If desired, the patient might then, and then only, enter the general room and feel that other lives were not endangered.

Suppose a mother, who has hovered about the beds of her boys dangerously ill with diphtheria until convalescence, should, tired and worn out, jump into a closed carriage and ride to a near-by Turkish bath to get the calming and soporific effect it leaves without consulting any one, since she has been used to taking the baths as a matter of course?

What might result?

The reader can answer this, I believe, to his entire satisfaction.

I do not pass judgment upon the value of the Turkish bath in many affections. I only desire to call attention to the subject in connection with gynecology. But what I have said regarding the modern ideas of cleanliness and guarding against contagion and infection deserves consideration.

CHAPTER XI.

GENERAL CONSIDERATION OF ELECTRICITY IN THE THERAPEUTICS OF GYNECOLOGY.

THE following discussion of central galvanization, general faradization, and static electricity is taken from Hare's System of Practical Therapeutics.

CENTRAL GALVANIZATION.

"Central galvanization I understand to be that method of treatment by which the whole central nervous system, brain, sympathetic nerves, and spinal cord are brought under the influence of the galvanic current. To accomplish this, one pole, usually the negative, is placed over the solar plexus, while the other is firmly pressed on the top of the head and gradually passed over the occiput, along the inner border of the sterno-cleido-mastoid muscle, from the mastoid fossa to the sternum, and from the cilio-spinal center down the entire length of the spine. For this method, which was first introduced and described a number of years since, is claimed a distinct and important position. The different applications to the head and neck which have been variously used since the time of Remak are simply forms of localized electrization; but in central galvanization, as is observed, the poles are so placed that the whole central nervous system is brought under the influence of one pole—usually the positive—without disturbing the other.

"One reason that has been offered for rejecting central galvanization is the fear that its relation to electro-physiological laws can not be fully explained. It is asserted that a remedy,

in order to be employed in any special disease, must have certain well-known physiological activities that directly meet or counteract the observed pathological conditions. To a certain extent this is true. For the relief of a dry skin and high pulse we resort to diaphoretics and arterial sedatives. To reduce the volume of blood in the brain we have bromide of potassium and chloral hydrate; but, on the other hand, can any one tell us minutely and satisfactorily why iodide of potassium tends to eradicate the syphilitic poison, or why many people are unmistakably influenced by the atmospheric condition preceding a thunderstorm? Yet we have facts to prove with certainty that these are more than coincidences. That we can not accurately localize the action of the current to limited areas of the brain has already been stated; but that external applications of the galvanic current penetrate directly to and appreciably affect it is thoroughly established, and the sedative and tonic effects that follow are well known to every one who has intelligently and thoroughly tested the method.

"Central galvanization demands a far greater familiarity with the physics of the constant current, and with both functional and structural derangements of the central nervous system, than is possessed by many who essay its use. If there is any one therapeutical process in the whole range of practical medicine that more than another defeats its own legitimate ends through careless and ill-directed or ignorant applications, it is this. As a matter of experiment we submit a person in robust health and with no marked nervous susceptibility to central galvanization. If the current is gradually increased and as gradually decreased, without interruptions, few if any unpleasant sensations are induced. The metallic taste is decided, the head experiences a sensation of fullness, and if the experiment be prolonged, or if the electrodes be small, itching and heat will be experienced at either pole, and on the head (the seat of the anode) slight pain of a dull aching character may possibly be felt. Another individual, however, of increased nervous suscepti-

bility will experience an exaggeration of all these phenomena, and may subsequently suffer from severe headache. Because of the symmetrical influence which the galvanic current, by the method of central galvanization, exerts on the brain, little if any dizziness is perceived by even the most sensitive patients. If, however, the current be passed transversely through the head, the so-called falsification of the muscular sense that results from an unsymmetrical stimulation (one pole affecting the right and the other the left hemisphere) is the occasion of immediate and intense vertigo.

"In thus transversely galvanizing the brain the hemispheres are differently influenced, and the result is a disturbance of the equilibrium. In conditions of health this dizziness, as a rule, passes off immediately on the removal of the electrodes, and is attended by no harmful results. In certain pathological conditions, however—and signally so when such conditions are associated with those peculiarly impressible nervous organizations that are so familiar—transverse galvanization of the brain is a highly culpable procedure. Let it be clearly understood, then, that in most cases this method should be avoided.

"I might cite not a few suggestive cases, and not solely from my own experience, illustrative of the importance of this law; but it will suffice, perhaps, if I simply indicate a few guiding propositions. And, first, there is a certain class of patients, that I have just alluded to as being peculiarly impressible, who will in no degree be benefited by passing the current transversely through the brain; on the contrary, if there is mental or physical derangement from any cause, such application immediately aggravates the existing disturbance. In many instances there is no outward indication of any such susceptibility, and very frequently the most careful examination will fail to elicit even a suspicion of any unusual relation of the nervous system to electrical stimulation. It is only when these patients are subjected to the test of actual treatment that idiosyncrasies are manifested which would not be

distinctly revealed by any other method. In two exceptional cases, for example, of which I have records, a current of comparatively feeble tension caused an astonishing excitation of all the nerves of special sense. Sight, taste, smell, and hearing were perverted and exalted ; and that these evidences of excitation were not the result of fancy I thoroughly satisfied myself by unerring tests. In these cases, as in a number of others that enter as factors into the experience that guides these observations, the after-effects were only less unpleasant than the primary, and were disagreeably persistent.

"Now, observe the effects of applications by the method of central galvanization in the same patients. The same tension of current caused a decided metallic taste (but no vertigo and no ringing in the ears), with a slight feeling of fullness about the head ; and persistence in this form of treatment resulted in decided relief. In consideration, therefore, of these facts, we should ever be watchful for these susceptible cases ; and to avoid errors of judgment that might prove unfortunate, we should not presume even on the most extended experience, but should, in the beginning, pursue a tentative course.

"In the second place, we have in cerebral effusion and softening, and especially in cerebral congestion, conditions that call for care in any method of galvanizing the nerve centers. In old apoplectic cases transverse galvanization of the head has often been used with no unpleasant results. There can be no doubt, however, that it might in many instances prove exceedingly hazardous, and I have even seen unmistakable evidence of the ill effects (dizziness and nausea) of an injudicious application of localized faradization in the neighborhood of the base of the brain and in the mastoid fossa. It is in cerebral congestion, however, that we see most clearly the importance of rightly selecting our methods of electrical treatment. To give any direction to the currents, excepting a longitudinal one (by which I mean from the summit of the head downward, or from forehead to occiput), is, I believe, not only unphysiological, but contrary to the teachings of extended and carefully recorded experience.

"In this connection, and especially with reference to central galvanization, an exceedingly important practical point arises concerning polar influence and current direction. Is the position of the poles or is the direction of the current the more important factor in the production of therapeutical and purely physiological effects? The French school, and notably Legros and Onimus, deny the efficacy of polar influence in exciting physiological phenomena, ascribing them chiefly to current direction. They ascribe anelectrotonic effects to electrolytic action, and to the induction of currents of polarization.

"The 'contraction laws' of Pflüger render it quite possible that in the electrical stimulation of a given nerve piece the polar influence has more to do with the resultant physiological effects than the direction of the current; and according to this theory the relative position of the poles in central galvanization (anode above and cathode below) would seem, on physiological grounds alone, to be chiefly indicated for the relief of symptoms of central origin. Experience, at all events, strongly confirms its propriety.

"It is very certain that in many conditions, and especially in true neuralgiæ and spinal irritation, therapeutic effects vary according to the position of the poles. In central galvanization few facts are better established, to my mind, than that certain conditions, such as cerebral congestion and forms of hysteria, may be injured rather than benefited by what are termed ascending currents; but whether the ill effects are due to current direction or polar action I am not prepared to say."

GENERAL FARADIZATION.

"In the administration of general faradization we employ, as is evident from its nomenclature, the faradic current alone. Its object is to bring the external portions of the body (from the head to the feet), and, as far as possible, the internal tissues and organs also, under the influence of the current. The galvanic current may be used in this way as well, but it is so rarely indicated that I have not included it in the enumeration of the methods of application. Its chemical and

reflex influences are so potent that, excepting in cases of rare and remarkable insusceptibility to influences of all kinds, its effects would prove harmful rather than beneficial. It is very seldom indeed that a case is seen in which general electrization is indicated—where, in other words, the faradic current is not sufficiently powerful, either directly or reflexly, to excite all the physiological activities.

"In order to bring the whole body under the influence of the faradic current, the feet of the patient should be placed upon a copper plate, to which the negative pole is attached. The soles of the feet are not at all sensitive to the current; but if the patient is especially nervous or susceptible, the feeling of constriction that is experienced in the ankles as the current passes, and the occasional contraction of the flexors and extensors, may become disagreeable and even hurtful. In this case it will be better to apply the negative pole by means of a broad soft sponge near the coccyx.

"The positive electrode may be either natural or artificial. The hand is the natural electrode, and those who are able to bear the requisite strength of current through their own persons, and are willing to subject themselves to the fatigue which follows its frequent use in this way, will find it unrivaled by any other form of electrode. It is not absolutely necessary that the hand be used, but it can be readily understood that no artificial electrode that human skill has devised can equal the hand in its flexibility and in the readiness and completeness of its adaptation to every inequality of surface. In all applications to the head, eyes, and face, and in the more general treatment of acutely susceptible patients and hysterical women, one will fail in numberless ways to obtain the same results by using any form of artificial electrode. Ordinarily, however, when the applications are made along the course of the spine and over the abdomen and lower limbs, the strength of the current demanded is too powerful to be passed through the arms of any operator, and, fortunately, artificial electrodes answer here as good a purpose as the hand.

"In submitting a patient to general faradization the operation should be conducted with some regard to system. In the first place, the hair being thoroughly wet, the hand is passed with firm pressure over the entire surface of the head. In treating the forehead, which is far more sensitive to the current than any other portion of the body, the operator should first press his moistened hand firmly over the part and then make the connection with his other hand on the sponge of the sensitive pole. The strength of the current when applied to sensitive parts of the body can be sufficiently regulated by increasing or decreasing the grasp of the positive pole held by the right hand. An application of the faradic current to the head in many forms of neuralgia, nervous headache, and insomnia, if properly given, is capable of affording instant and most grateful relief.

"There are few, however, who administer it with any degree of precision or skill, and, as a consequence, we witness aggravation instead of relief of pain. The slightest concentration of current in such situations as the forehead is capable of exciting pain even in the normal condition, while a proper diffusion over a broad surface, with equal and gentle pressure, affords a sensation as agreeable as it is curative.

"The back part of the head and upper portion of the spine (cilio-spinal center) will usually bear powerful applications; and it is an interesting and important fact that the applications to this center will produce far greater tonic effects than when the pole is applied to any one other portion of the body. Care should be taken to avoid all bony prominences, since slight currents in these regions give pain. Hence over the scapula, clavicle, sternum, crest of the ilium, tibia, etc., care should be exercised in the moderation of the current. Let the first applications be tentative.

"Experience will soon teach that there is no remedy to the effects of which there is such a varying degree of susceptibility as this. A glance will not suffice, and frequently careful examination will fail to give information as to the proper strength and thoroughness of the treatment that should be

first attempted. Not until the patient is submitted to a careful electrical test can we be sure that what we might have considered very gentle treatment will not be too severe for the case in hand. As in the administration of localized galvanization, the current may be uniform or increasing. When the electrode is on the head, cilio-spinal center, epigastric region, or when pressed firmly on the various motor points and nerve plexuses, the current should be increasing. To make the applications successful, not only for ultimate good but also that the patient may experience no subsequent weariness, soreness of the muscles, or vague but distressing nervous feelings, requires far more care and experience than is generally supposed. On the part of the operator are demanded a certain degree of mechanical dexterity, entire familiarity with the instrument required, a complete knowledge of electro-therapeutical anatomy, a personal acquaintance with the sensations and behavior of all portions of the body under the different electrical currents, and close and patient study of the diseases and morbid conditions in which they are indicated.

"General faradization is, to me, indispensable in the practice of electro-therapeutics. Beginning with the method many years ago, and at first confining my manipulations in electricity almost exclusively to it, I have not to this day een cause to abandon its practice. There is no one tonics influence in medicine comparable to it in power; there is none to which can be accorded such a wide range of application. I can only account for its neglect on the part of those who profess proficiency in electro-therapeutics because of the time and labor requisite for its successful utilization, and the unwillingness of the physician to subject himself or his patient to trouble.

"The use of static electricity is of very great value, especially in cases in which there appears to be congestion of the nerve centers. By first dry-cupping the back of the neck and applying a few mild shocks to the same location, and then finishing with the electric shower, as it is sometimes called, over the head, great relief is often obtained. In an

overworked brain that requires rest and sleep that will not voluntarily come, this use of electricity is of vast benefit. The apparatus, however, is not so likely to be at the command of the practitioner as those giving the ordinary continuous and faradic currents."

STATIC ELECTRICITY OR FRANKLINIZATION.

"By franklinization is meant the application to the body of franklinic or static electricity. The simplest form of treatment is by insulation. By this method the patient is placed upon an insulating stool or table and connected with the conductors of either side, according as a positive or negative charge is desired. This silent reception of the electricity and its silent and more gradual discharge from the body to the surrounding atmosphere produce in most persons very pleasant effects. The hair of the head rises up, accompanied by an agreeable sensation, as if the wind were playing gently around. The pulse may be slightly accelerated and the face become flushed, while after a time it is occasionally observed that a slight but general perspiration appears. This condition may frequently be kept up with advantage for twenty minutes or so, until an agreeable feeling of drowsiness is experienced.

"In the treatment by sparks or spray the patient is first put in the condition of insulation just described. Sparks can then be drawn from any portion of the body by the near approach of a conducting substance. Brass balls of various sizes, mounted on glass handles held by the operator, connected by a brass chain with the ground, or, better still, with the nearest gas or water pipe, are usually employed. As a substitute for general faradization, although by no means so generally effective and far less agreeable, the metallic roller may be used. It acts reflexly and excites the cutaneous nerves most decidedly. When the roller is used upon the bare skin the conduction is so perfect that no sensation is appreciated. It is only when the clothing intervenes that the peculiar pricking sensation is observed. It is needless to

say that to obtain the best therapeutic effects of the roller it should be applied over the clothing. The electric wind, so called, following the use of the pointed electrode is due to the agitation of the air between it and the person treated. The discharge is silent and the effect exceedingly agreeable and refreshing.

"**Treatment by Shock.**—This is a violent method and not usually called for. It is produced by bringing the body, or that portion of it on which we wish to operate, in the circuit between the outer and inner coating of the Leyden-jar attachment. In addition, a static induction current, first described by Dr. W. J. Morton, of New York, can be obtained. This has been suggested as a substitute for faradic electricity. It is claimed for this current that it produces maximum muscular contractions with a minimum amount of pain, and that the response is quicker than that from the faradic current. As for the first claim, it is difficult to see how it can be determined, since the ordinary faradic current, from the single-coil apparatus especially, need seldom call forth pain in the production of muscular contractions. The change in the apparatus for the production of this current is quickly and easily effected, and for the purposes of localized electrization is most valuable. For general faradization, however, I can quite confidently assert that it is inferior to the current produced by the best faradic apparatus. That it possesses certain advantages, however, over the faradic current can not be denied. Its voltage is enormous, and the alternations of each spark (millions per second) so rapid as to necessarily give it precedence in many respects over the ordinary induction current.

"In order to obtain this current it is necessary to hang a pair of Leyden jars, as seen in the illustration, upon the arms of the machine. As the strength of the current is modified by the size of the jars, it is well to have several sets of different sizes. Rheophores to which ordinary sponge electrodes are attached are joined to the hooks that rest upon the outer coating of the jars. The strength of the

current is in direct proportion to the distance apart of the two knobs of the discharging rods. These, therefore, should approximate closely at first, and be separated gradually as a stronger influence is desired.

"The absolute value of franklinic electricity as a therapeutic agent is, without question, very great. Its relative value can not be estimated with the same readiness, since

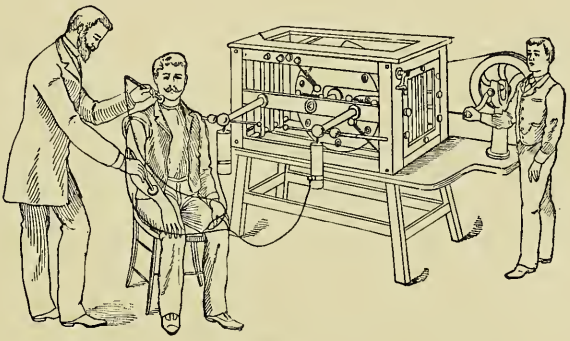

Fig. 2.

conclusions on this point render it necessary to compare its effects with those of dynamic electricity. Any arguments, therefore, in the direction of showing that franklinic electricity has greater claims upon us as a remedy than has been generally believed must of necessity be quite valueless unless they are based upon long and thorough use of the different forms of dynamic electricity, especially by the methods of general faradization and central galvanization. The difficulty of obtaining reliable and exact information in regard to this matter will undoubtedly lie in the fact that in the future, as in the past, clinical reports will be too often given by those who have had no systematized or adequate experience in the use of dynamic electricity.

"Sedative and tonic effects of a very interesting character are undoubtedly obtained through franklinization, but these effects are hardly equal in variety or degree to those that follow the careful and thorough use of dynamic electricity by the methods above mentioned. None the less, however, do

we hail the recent revival of this neglected department of electro-therapeutics, not only because in certain conditions it may possess some advantages, but because, through peculiar idiosyncrasies, it is sometimes better borne than the other forms. It must not be forgotten, however, that, as a rule, general faradization is far more agreeable than treatment by sparks, however carefully given. Those who assert to the contrary do so through lack of experience or skill in the general method of administering faradism.

"Of all the approved methods of using electricity, franklinization has the advantage of requiring the least skill and experience in its administration, and the disadvantage of necessitating apparatuses that are cumbersome, expensive, and not in the same degree reliable as the instruments for the generation of dynamic electricity. A still further advantage lies in the fact that little if any disrobing is necessary, since the drawing of sparks and the general stimulation of the surface are accomplished through ordinary clothing.

"Another important reason for the use of franklinic electricity and one which, to my gratification, I have thoroughly tested, is its occasional value in supplementing and re-enforcing the constitutional tonic effects of general faradization.

"It is one of the familiar things in medicine that a remedy which at first acts most effectually may after a time cease to have the desired effect. If now we substitute a remedy of the same class, even though it be inferior, further benefit often follows, and upon returning to the original treatment this again will act with renewed vigor. The same principle holds good in regard to the dynamic and static forms of electricity. Occasionally cases of nervous exhaustion, as well as other forms of disease, after improving up to a certain point under the influence of galvanism or faradism, hang fire, as it were; but by submitting the patient to the action of franklinization a new impulse seems to be given. In this way, one treatment supplementing and re-enforcing the other, results are obtained far more satisfactory than could possibly

follow the exclusive use of general or localized faradization, central galvanization, or franklinization.

"To determine the exact status of franklinic electricity we need still to experiment and observe. A considerable experience, however, in its use would lead me to thus formulate what I believe to be the truth in regard to this matter:

"1. As previously asserted, tonic and sedative effects of a very decided character can be obtained from franklinization by either insulation or sparks. These effects, however, are equal neither in variety nor degree, taking the cases as we find them, to the effects of dynamic electricity properly and thoroughly used after the methods of general faradization and central galvanization. As supplementing these methods, however, when in protracted cases they seem in a measure to have lost their effects, we have abundant testimony of its value.

"2. It has long been known that many temperaments and conditions of disease would bear faradization or galvanization readily, and yet shrink from electrization from sparks, while the reverse was not so evident. At the present time I have under my care two women, members of the same family, both suffering from analogous affections. One regards general faradization as exceedingly agreeable and is benefited by it, but shrinks from the treatment by sparks, and even dislikes the milder method of insulation, and subsequently complains of disagreeable sensations; the other much prefers the more positive treatment by franklinization.

"3. As compared with the faradic current alone, franklinic electricity has undoubtedly some advantages in the treatment of some forms of neuralgia; but as compared with both the galvanic and faradic currents, I have been able to demonstrate no such advantage. Galvanism alone is superior to franklinism for the relief of pain, and yet the latter occasionally aids the former method not a little, on the same principle that it may be often used to supplement the use of dynamic electricity for the production of tonic and sedative effects.

"4. In electro-diagnosis franklinic electricity (excepting the static induction current) is of but limited value, those qualitative and quantitative changes which are so important as indicating structural degeneration being satisfactorily made evident only through the action of the two forms of dynamic electricity. In electro-surgery, also, franklinic electricity is of but little value."

THE INTERRUPTED HIGH-VOLTAGE PRIMARY OR MIXED CURRENT.

Dr. George J. Engelmann, of St. Louis, in the Medical News, February 3, 1894, says:

"The interrupted high-voltage primary or mixed current is one of the results of experiment with my new independent interrupter, devised for my faradic apparatus, but to be used also in connection with any galvanic and faradic apparatus; it has proved to possess an individuality peculiar to itself and of great physiologic efficiency, so that I am convinced of its therapeutic value, and present it for the consideration of the profession.

"This current, which I term the *interrupted high-voltage primary* or *mixed* current, is obtained by the interruption of the galvanic flow passing through the secondary coil of the faradic apparatus, and is taken from the terminals of that secondary coil, here used as a primary, which is of higher voltage, of many more winds and greater resistance than the ordinary primary in medical induction instruments.

"The current so obtained is hence not precisely identical with the primary faradic, and may properly be termed a *mixed* current, if not an *interrupted* primary of higher voltage.

"A well-regulated, controllable interrupter is, above all, necessary. Any galvanic battery may be used; one pole is connected with the interrupter, and through this to one of the terminals of the secondary coil of the faradic apparatus (the binding post from which the secondary current is taken); the other pole of the galvanic battery is connected directly

with the remaining terminal of the secondary coil, and with these same two terminals the rheophores carrying the electrodes are connected.

"A current so produced combines the characteristics of the galvanic and the induction flow; it has the same galvanometric quantity and the same chemic effect as a simple gal-

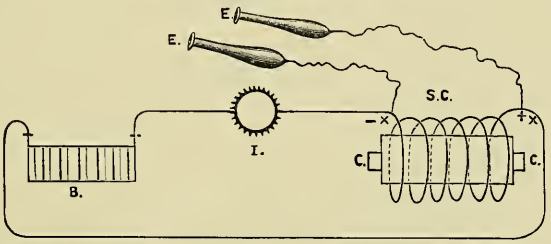

FIG. 3.—B, Galvanic battery; I, interrupter; SC, secondary coil; −x and +x, terminals of coil; C, core and primary coil; E, E, electrodes.

vanic current of the same intensity, or from the same number of cells applied in the same manner *plus* the voltage and the physiologic effects obtained from the winds of the coil. Coil and patient being connected in multiple, the resistance is diminished and the current increased, but increased in voltage rather than ampèrage—converted, I may say.

"The *physiologic effects are peculiar*, and differ materially from those of any other form of electricity in medical use, the current combining, as it were, the quantity and chemic effect of the galvanic with the voltage of the faradic; the effects resemble most nearly those of the primary faradic, but are more powerful and indicative of greater quantity, most marked in their *action upon muscular fiber*, which is affected by this *as by no other form of electricity*.

"A variety of effects are produced by the use of different current intensities and different coils; yet while this current will undoubtedly be of distinct value in certain nerve lesions, it will prove pre-eminently a *muscle* current, as it contracts the muscle most perfectly, acting upon every fiber in the most marked manner, like a powerful interstitial or intercellular massage.

"The character and effect of the current depend upon the following elements, which must be noted, as it is by a variation in these factors that the varying therapeutic results are obtained:

"1. The number of cells or intensity of the primary battery flow.

"2. The resistance and number of winds of (the secondary) coil.

"3. The number of interruptions.

"4. The position of the secondary coil in reference to the core and primary.

"5. The character and location of the electrodes.

"1. The number of cells used or the intensity of the primary battery flow determines the galvanometric measure and chemic effect. These being the same as from an ordinary galvanic current without insertion of the coil and applied in the same manner, it is evident that the character of the current must in a measure depend upon this factor; but as voltage and induction effects are prominent, the number of cells to be employed is determined, not by the chemic effect to be produced, but by the coil to be used. Only one cell can be employed in connection with a short coil, the number of cells being increased with the resistance and number of winds in the coil; but more than ten or twelve cells, if in good condition, can hardly be used to good advantage, even with the long fine coils, at least on healthy tissues.

"2. It is the coil pre-eminently which determines the character and effect of the current, the resistance and number of winds materially varying its physiologic value, but not in precisely the same manner as when used as a secondary in the faradic current proper. The faradic current from a coil of high voltage, or many winds, has *least* quantity, while the mixed current from this coil is of necessity one of *greatest* quantity.

"The lower the resistance of the coil and the less the number of winds, the more powerful the induction effect and the less the quantity of the primary galvanic force to be em-

ployed: No. I coil (Engelmann), 0·8 ohms R., 528 winds, has an effect, both motor and sensory, too powerful for therapeutic use, even with one single cell of the weakest Leclanché.

"No. II, the medium coil, 13 ohms R., 1,750 winds, with one cell from any galvanic battery, produces the most satisfactory, deep, muscle-contracting currents, permeating every fiber. This is *par excellence* the coil which gives value to the current, and it is remarkable how completely it can be

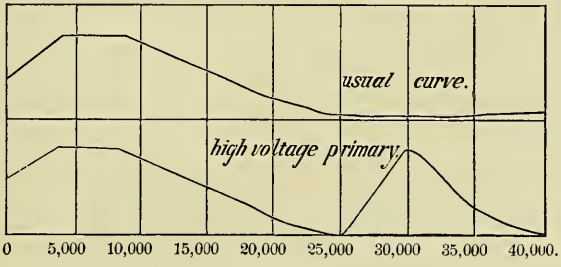

FIG. 4.

confined to a distinct muscle by the location of the electrodes; while permeating its fibers it does not seem to radiate beyond.

"For the developing of the most satisfactory results, the number of cells used must be increased with the resistance and number of winds in the coil:

	Feet.	Wire.	Winds.	Number of cells found to be effective.
For a coil of	1,500	36	4,000	4 to 5
" "	3,000	36	7,000	7
" "	4,500	36	10,000	9 to 11

"By longer coils muscular contractions are likewise produced; but these are more painful, and the chemic effects of the galvanic current begin to assume prominence; these should prove efficient for other therapeutic purposes when more marked galvanic effects are called for.

"3. Change of relation between the secondary coil and the

primary coil and core—i. e., the moving to and fro of the coil on the scaled slide—varies the intensity of physiologic effect. This variation of intensity is similar to that of the primary faradic, but differs in some features; if coils of low electromotor force are used, the intensity of physiologic effect is increased by a sliding out of the coil away from the core; this is most marked in the coil of fewest winds, coil I, 528 winds; somewhat less so, but still very decided, in coil II, 1,750 winds, 13 ohms R.; coils of higher E. M. F., longer; fine-wire coils, on the contrary, *weaken* the current effect by the drawing out of the coil, or the moving away from the core; this is true, even of the coil of 1,500 feet, or 4,000 winds, and of the muscle coil of fine wire in multiple, 6,500 winds, and only 4 ohms R.

"The true primary coil of the apparatus is ignored in these experiments, and its terminals are not connected. When this is done it acts as a damper, like the copper tube of Duchesne, to weaken the current.

"4. The number of interruptions, or the rates of vibration, control the physiologic effect of this current, as they do that of the faradic, while the chemic and galvanometric action is affected but little and that in a contrary sense.

"Interruption and alternation affect the physiologic action of this current in the same manner, but I shall speak only of interruption pure and simple, as it is the interrupted primary which will prove of greatest therapeutic value, this being more agreeable, less painful, and harsh than the alternating, and equally, if not more, efficacious as a muscle contractor, so that the alternating primary will only be used when it is of importance that all chemic action be avoided. Both currents, interrupted and alternating, will respond to certain therapeutic indications; but as a simple muscle contractor the more irritating and disagreeable alternating will find little favor as compared with the interrupted current; both, however, respond in precisely the same way, as regards physiologic effect, to variation in the rate of interruption.

"Other conditions being equal, the same number of inter-

ruptions and alternations produce the same effect—i. e., 10,000 interruptions have the same comparative effect as 20,000 alternations upon the current. As in the secondary faradic, the effect of the current increases with the rapidity of interruption from 1 to 2,500 or 3,000 per minute, and, after attaining a maximum effect, decreases with increased rapidity of interruption until a rapidity is reached with which all sensation ceases. Though the galvanometric effect is unchanged, the chemic effect increases; the more intense the current, the greater the number of interruptions necessary to completely annul its effect.

"Coil I, heavy, with one cell, causes powerful and painful contractions—too violent for general use with the ordinary rate of interruption; yet it ceases to have any effect, or to be felt, with 14,000 interruptions per minute (this when full in, over core, with small sponge electrodes to upper and lower arm, the effect depending greatly upon the moisture of the electrodes and the pressure upon them).

"The 10,000-wind coil, 4,500 feet of 36 wire, 11 cells, sponge electrodes to upper and lower arms, ceases to be felt at 25,000, while if only 7 cells are used, the same result is accomplished by 20,000 interruptions per minute.

"The general law mentioned—of increase of effect with increase in rapidity of interruption, then decrease with still greater rapidity—holds good with one curious exception, true of the secondary faradic, as it is of the interrupted or alternating high-voltage primary; and this interesting phenomenon, which merits a more thorough discussion elsewhere, I must here at least note: It is that currents from certain coils, as far as I have observed, from 5,000 to 10,000 winds, 36 wire, under certain conditions, after passing that rapidity of interruption at which they cease to be felt, *reappear* with greater rapidity, again *attain the previous maximum*, to again lose all effect with still greater frequency of interruption. In place of the simple rise and fall, there is a second shorter and additional curve of rapid rise to the previous maximum and fall to zero.

"The 36-wire coil of 10,000 winds, with 11-cell primary galvanic force, ceases to be felt with 25,000 interruptions, then reappears, regains its previous efficiency at 30,000, and again weakens as the interruptions grow more rapid, to completely fade away as they attain a speed of 40,000 per minute; if fewer cells are used with the same coil, precisely the same phenomenon is observed, the same effects being produced by lower rates of interruption as the current is weaker.

"5. That the character of the electrode, which determines penetration and surface resistance, influences this current, as it does both galvanic and faradic, need hardly be mentioned; material, size, degree of moisture, location, and pressure upon the electrode, all serve to vary the sensation and effect of the current, and must be considered as determining factors. . . ."

CHAPTER XII.

MUSCULAR EXERCISE, MASSAGE, AND DIET IN DISEASE.

MUSCULAR EXERCISE.

In the management of the diseases of the pelvic organs, especially during convalescence, it is often necessary to employ muscular exercises, and, in order to be effective, the exercises should be taken in the recumbent position. The extremities can be exercised as follows: The patient resting upon the back, one leg is raised so as to form an obtuse angle with the body, held in position for a minute and then slowly returned to the bed. This is repeated as many times as the patient can do so without being tired. Then the leg is flexed and extended several times, then the leg flexed upon the thigh and the thigh flexed upon the body; each movement is made as often as the patient can do so without muscular fatigue. Then the other leg is treated in the same way. The leg is raised straight and abducted and adducted as many times as the patient can do so without discomfort.

The arms are exercised in a similar way, only that both arms can be used at the same time. First, they are raised so as to form a right angle to the body; this is repeated several times; then they are extended above the head and down again straight by the body. Then the forearms are flexed upon the arms. The hands are exercised by forcibly closing and opening the fingers and bending the wrist in every possible position. All these exercises should be continued until a slight feeling of fatigue is observed.

I was first led to adopt this method of exercising at the suggestion of a patient who was a noted gymnast. She re-

quired a surgical operation, and during convalescence she devised this system of exercise and practiced it with benefit. I adopted it and have used it in practice ever since, and have found it beneficial in cases with active pelvic disease to elevate the foot of the bed during exercise. This treatment is especially adapted to cases that have profited sufficiently by massage to be able to take active exercise.

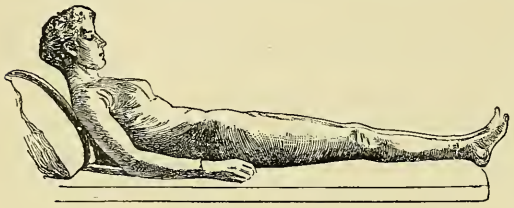

Fig. 5.

There is, of course, nothing original in this; it is merely an adaptation of ordinary light gymnastics to the treatment of the sick who are confined to bed and to those suffering from affections of the pelvic organs who can not exercise in the erect position.

When patients have progressed toward recovery there are other exercises that may be employed to strengthen the muscles of the back, abdomen, trunk, and limbs, when these have become weakened by prolonged inactivity or sickness.

Dr. Savage (quoted in Dr. R. L. Dickenson's article, Simple and Practical Methods in Dress Reform) advises (for strengthening the abdominal muscles) "the patient to lie on her back in bed, to raise the head and shoulders a few inches from the pillow, and, holding the head steadily in that position for a moment, to slowly drop back again to the pillow (Fig. 5). This is repeated immediately, there is an interval of rest, then twice again is the motion gone through—fatigue never being induced—and five repetitions finish this exercise.

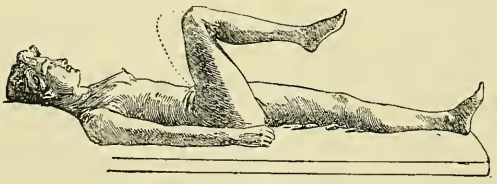

Fig. 6.

"Still later the feet are to be fixed against the footboard, and the patient assumes a sitting position, at first

using the pillow; but, soon giving this up, the woman is to rest flat on her back and go through this exercise five times.

"Again, the patient, lying on her back, brings the bended knee toward the face as far as is possible without effort; then it is forced toward the face an inch or two (Fig. 6). This is done with the other leg. The exercise is five times with each knee.

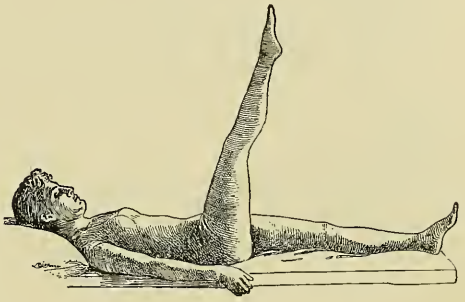

Fig. 7.

"A more difficult exercise is—the woman on her back—to slowly raise first one leg and then the other from the horizontal to the vertical position (Fig. 7). This is done ten times with each leg.

"Finally the abdominal muscles are strengthened by placing on the abdomen any flat weight—the woman on her back—and then deep abdominal breaths are taken to lift the weight as high as possible, holding it there a few seconds. A slow expiratory effort follows.

"This strengthens the muscles of the *back*. The woman—lying on her back with her feet drawn up—raises her hips until the thigh is on a line with the body, keeps this position a moment, and then slowly drops back (Fig. 8). This is repeated five or ten times.

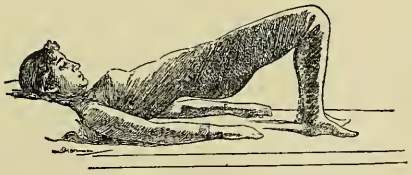

Fig. 8.

"Lying full length, prone, with her arms at her side, the woman breathes deeply, raises head and shoulders from the pillow, keeps this position a moment, and then slowly lets the head and shoulders fall back (Fig. 9).

"The following is more difficult: The body is lifted off the bed four or five times, with a rest between each effort, the elbows and toes being the only points of support (Fig. 10).

"Finally the lateral muscles of the trunk can be strengthened—the woman lying on one side—by lifting the hips and making the shoulder and lower leg the points of support."

Systematic exercise is irksome, and when solitary still more so. Few can or will follow these directions, and the gymnasium or out-of-door sports, with their variety, companionship, stimulation, and *emulation*, will be the surest—perhaps best—means of completely restoring muscular strength. But the exercises given above are adapted to those who are not well enough to take out-of-door work.

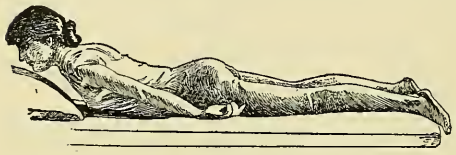

Fig. 9.

Each exercise or movement should be repeated until the muscles are beginning to feel fatigued, a note made of the number of repetitions, and one or two added each day. When progress is evident, walking should be begun, at first with the support of the attendant and then without; but, like all other efforts, it should be regulated and increased by degrees. Next come riding and walking, and finally diversion may be followed by useful occupation.

All through the treatment baths should be used to keep the skin active and clean, and also as an occupation and exercise. The form of bath should be adapted to each case. That to which a patient is accustomed and which is agreeable to her, and not followed by any ill effect, should be employed.

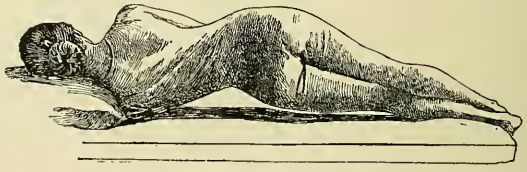

Fig. 10.

There are other exercises, used in special affections (given by Dickenson in Hare's System of Practical Therapeutics), which are worthy of attention. The following is quoted, with some slight verbal changes, from the article on Weak Levator Ani and Relaxed Pelvic Floor: "1. The

patient is taught to contract the levator and draw up the pelvic floor, drawing back the abdominal wall by deep breathing at the same time, standing against a wall or sitting. 2. Lying on the back, feet drawn up and crossed; buttocks are raised; then the knees are slowly opened wide against her own resistance (Fig. 11).

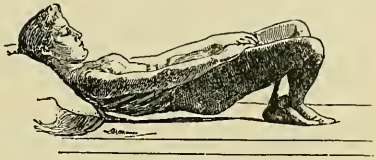

Fig. 11.

3. Knee-chest position. Patient takes deep abdominal breath, then expresses it by contracting the belly muscles forcibly, at the same time drawing up as strongly as possible the muscles of the pelvic floor (Fig. 11)."

"MUSCULAR EXERCISES FOR AMENORRHŒA."

I give these without the illustrations.

"First, with one foot forward a deep breath is drawn and the arms elevated above the head, parallel in front and palms facing inward; then, during expiration, they are brought down laterally with palms facing forward.

"Secondly, lying on the back, the lower extremities unsupported and the legs crossed, the toes execute circles from within outward, the movement occurring in the ankle joint. This is repeated reversely eight or ten times in each position.

"A third exercise is for the patient to stand upright, with feet well apart, the buttocks resting against a table, and arms above the head. The trunk is flexed on the pelvis sidewise and forward, slowly, five times to each side, pausing between each motion.

"A fourth is with the hands on the back of a chair, one foot upon another chair behind her; the patient rises on the toes of the other foot, then drops toward the ground by bending the knees, then resumes the extended position on the toes, finally dropping on her heel as before the start. This is done slowly five times with each foot.

"Again, the patient stands upright, with feet apart and

arms elevated; the body is bent forward, then backward, then pauses in an upright position. Five times each.

"Sixth, resting a hand on the back of a chair before her and standing on the leg of the same side; the other leg is raised, and the knee rotates from within out. Reverse the legs.

"Seventh, with hands on the hips and body well back, a running motion is executed; but the patient remains in the same spot, each step bringing the thigh up on a level, horizontal plane. Ten times rapidly, then three or four times with an interval between each. This sends a good current of blood to the pelvis.

"Eighth, standing with feet apart and hands on the hips, the head describes a circle. Five times in each direction.

"Ninth, kneeling on a cushion with knees apart, the body is bent backward and returns slowly to the perpendicular, five to seven times.

"The tenth is a passive motion. The patient is semi-recumbent. The assistant lifts one leg by a hand in the popliteal space and another on the sole. The thigh is flexed on the abdomen, carrying the knee outward, describing a small circle, repeating the motion ten times, while increasing the rapidity of it; after a pause the assistant again commences, and thirty or forty movements are given to each leg, the patient being absolutely relaxed. Flexion and extension can be made against resistance.

"**Metrorrhagia** is treated by movements that are quite as elaborate. First, the patient sits facing the giver of the exercises, with her hands on her hips and her knees apart. The operator puts one hand on her shoulder and the other under the opposite axilla, drawing her forward and simultaneously twisting her body on the pelvis. She is to resist the forward motion and the operator is to resist the backward motion, six times for each side. Then a direct forward-and-back pull is made, the patient keeping the back muscles very tense.

"Secondly, the patient is to kneel with her hands on her

hips. The operator, behind her, puts his knee against her and his hands under her axillæ; she bends forward while he resists, and then he draws her upright while she resists. When she is bent forward he rapidly twists her body several times above the pelvis. This is done five times, a rest between each manœuvre.

"Thirdly, the patient stands in a doorway, the arms vertical, hands against the top of the doorway, while the operator places one hand on the abdomen and the other between the scapulæ and pushes her forward. As she regains her first position he resists and pushes her hand upward ten times.

"Fourthly, the patient stands with her back against the wall, her hands on her hips, and she places an ankle in the operator's hand, while he steadies her by placing his other hand against the iliac crest of the same side. He draws that leg up and out, she resisting, and he then resists while she lowers the leg. This pump-handle motion is repeated five times for each side.

"Fifthly, the patient leans against a chair or bedpost at as great a slant with the floor as possible, while the operator, one hand under the abdomen, lifts the foot, the patient passive. Then he depresses the leg while she resists. Five times for each side.

"Sixthly, the patient, leaning forward, puts her hands against the wall, chest level, turns the elbows out, and keeps the feet apart. The operator, one hand supporting the abdomen, taps lightly on the sacral lumbar vertebræ with half-closed hand.

"Seventhly, the patient, supine, draws her feet together under the bended knees, lifting the hips clear of the couch, the operator resisting an attempt to draw the knees together. Five times. Then he resists an attempt to separate the knees. This manœuvre strengthens the levator.

"Lastly, if the patient is physically incapable of performing any of these movements, she reaches her hands to the operator, the elbows slightly bent, while he moves her arms at the shoulder joints in all sorts of circling motions while

she is passive. She then bends the arms, he resisting flexion, she extension."

Brandt has also, with brilliant results, instituted a system of gymnastics and massage of the pelvic organs. With one hand on the hypogastrium, he "kneads" the pelvic organs and tissues that are lifted within reach by a stationary finger in the vagina. Exudations and adhesions are made to disappear, and fixed ovaries and retroverted uteri are restored to normal positions. The method is applicable in chronic inflammation of the tissues of the pelvis, with or without uterine displacement; in displacement and fixation of the ovaries, and chronic ovaritis; in relaxation of muscular tissues and all that results therefrom; and perhaps in hæmatocele.

But these procedures are all contraindicated in acute inflammations, gonorrhœal infections, extreme sexual nervous irritability, and where the abdominal walls are very thick and fat.

Now, whether by *masseur* or *masseuse*, no one of these or other like manœuvres should be performed save in the presence of a third person, preferably a nurse or relation of the patient, for reasons that are all too obvious. It is understood that the *Brandt method* is expensive, slow in effecting a cure, not at all easy to learn, and dangerous when a correct diagnosis has not been made.

SWEDISH MOVEMENTS.

"Swedish movements" is a branch of mechanical therapeutics whose systematization, as is well known, was made by Ling in the early part of the present century. A great many machines were constructed, by means of which different groups of muscles were moved in hundreds of ways. When patients could not or would not exercise their muscles, these machines did it for them. As much fatigue follows this artificial exercise as the natural.

In diseases of women and for benefiting those who are not diseased, but feeble, debilitated, or nervously exhausted, the only claim that can be made for this system is that by devel-

oping the muscular tissue to its full capacity undue nervous irritability is diminished, and by acting on groups of muscles a derivative action is obtained and engorged and congested organs are thereby relieved. This form of exercise seems to me most applicable for chronic functional disorders. Its complicated apparatus renders it impossible for the use of the general practitioner, and only in gymnasiums, sanitariums, and institutions especially devoted to these kinds of remedial agents are the means for applying it found.

MASSAGE.

When the tissues of the body have motion communicated to them from an external source for remedial purposes, the procedure is "massage."

Massage is not, properly speaking, for physical culture, but is of therapeutic value only; and it may be immediate (the motion being communicated directly to the part operated upon) or mediate, when some mechanism produces the motion.

Stroking, kneading, friction, and percussion are the four chief procedures.

Stroking should be performed by the palm of the hand, and its motion should be centripetal, toward the heart. At times one hand is placed on top of the other in this motion.

Friction, as a rule, is performed by the tips of the fingers over small areas, but the thumb is far better than the fingers for this. A good *masseur* does not irritate the skin in this process.

Kneading is the grasping of a muscle or group of muscles by one or both hands and rolling or squeezing it, or them, upon the part subjacent. When a limb is held between the palms and a rapid to-and-fro movement is made, the limb being rolled back and forth between the hands, the motion is called *fulling*, because fullers or bleachers rub linen thus. And, again, when the alternate successive pressures and relaxations are made with great rapidity—and this requires a *masseur* of skill and long practice—kneading is called *vibration*.

Midway between kneading and percussion is *pressure* with the finger tips or knuckles.

Percussion is the last distinct method in massage. The hand may be used, or an instrument called a *percussor* or *muscle-beater*. The best ordinary percussor is Klemm's, and the best electric percussor is that of Granville, of London. In percussing, the *masseur* may perform clapping, chopping, whipping, or flagellation.

In this work I do not think it necessary, nor indeed at all pertinent, to more than refer briefly to massage in its relationships to the medical diseases of women, or to the special regions immediately about the pelvic organs.

Abdominal massage is only efficacious when the patient's abdominal muscles are relaxed. Should fæcal accumulations be suspected, massage about the cæcum and sigmoid flexure is advised chiefly by stroking. General massage of the abdomen invariably increases peritoneal absorption, says Reibmayr; and the absorption of free fluid from the abdominal cavity is accelerated. This scientist's experiments upon healthy rabbits are most interesting.

There is no doubt but that rapid circular strokes over the abdomen produce a marked effect upon the peristaltic action of the intestines.

Regarding the thermal effects of abdominal massage, it is found that it—without movements—diminishes the temperature of the extremities.

Functional derangements of the liver and spleen, whether with or without congestion and engorgement, are quite amenable to massage.

Digital manipulation of the gall bladder is very important, for in the case of one patient who had passed one gallstone, as many as seventy were subsequently found in the stools after careful massage of the gall-bladder region; and Yopadze praises massage in catarrh of the bile duct.

It is in dyspepsia and in functional disorders of the digestive apparatus in women that massage of the abdomen is of great benefit. Food is not retained in the stomach for so

long a time, and the gastric and biliary secretions are stimulated. Of course, it is contraindicated in hypermobility of the stomach.

Kneading the abdomen for that most prominent of all female conditions—constipation—is a powerful therapeutic agent; and in obstinate cases vibratory movements are to be resorted to. Reibmayr says it is the surest remedy for habitual constipation.

In the dyspepsia of chlorotic girls it is most useful; but should gastric ulcer be suspected in such cases, it is *never* to be employed.

For obesity or corpulency in women and for excrementitious plethora abdominal massage, liver clapping, percussion of the spine, and strong thigh motions to aid contraction of the abdominal muscles—these, with the correct diet, in some cases diminish the uncomfortable and sometimes unsightly condition.

Percussion and strong stroking are the best means for the relief of ascites by massage.

In pelvic engorgements and in all functional uterine derangements massage and movements aid other methods of treatment.

In prolapse of the uterus Brandt advises massage and certain gymnastic movements strengthening the supports of the uterus after its reposition. The method is most successful when the tissues are young and have not lost their tone, and after their restoration by surgery where tonic reaction is demanded.

Brandt's method should never be employed in acute inflammations or upon the old and debilitated.

The preliminary treatment is made when the patient, standing, bends forward, resting her hands against the edge of a table, when the physician begins a slight *tapotement* upon the sacrum with his fist, the result being contraction of the vessels when the *séance* is short, and dilatation of them when it is prolonged.

Following this, the uterus is elevated and replaced in its

normal anteverted position by the physician's left hand, his right hand pushing the abdominal wall down behind the symphysis but in front of the strongly anteverted fundus. The assistant (and an assistant is always required) elevates the uterus standing at the foot of the bed, bending the patient's hip joints at an angle of ninety degrees by slipping a hand under each knee. The bent extremities of the patient press against his pelvic region, but her knees are kept well apart and her feet together.

The next procedure is for the assistant, with arms straight and finger tips of each hand close together, to bend forward over the patient and grasp the sides of the uterus not too low down and steadily and slowly draw it up along the curve of the pelvis past the promontory. After having been raised to this position, it is allowed to slip from the assistant's hands and very gently slide back into the cavity.

The physician maintains it in anteflexion as it sinks and the tissues contract to hold it; indeed, vaginal contraction around the tip of the finger is often felt. This procedure is repeated very gently two or three times during each visit.

In the intervals between the operations the physician's index finger sweeps by circular motions from the fundus toward the internal orifice, that contractions may empty dilated veins and thus reduce congestion. It is claimed that measurement proves diminution in size of the uterus after such procedures. I must say that the value of Brandt's method is not in replacing the uterus but in the effect upon the nutrition of the tissues in stimulating the circulation and the absorbents.

Brandt advises massage of the utero-sacral ligaments, forbids the use of grease of any sort, and that the work be done outside of a chemise or cloth, so that the hands may not slip. No pain should be induced in carrying out any part of this programme.

The muscles of the pelvic floor, the levator ani, the thigh abductors and adductors are strengthened subsequently by the exercises already described and commended for that purpose.

During the day the patient should often lie down and, crossing her feet, alternately contract and relax the levator ani.

After knee resistance the patient gently turns, to assume the knee-elbow position, and thus breathes with the thorax alone, pelvic pressure becoming so low that the anteflexed uterus will remain in position. Sacral *tapotement* is gently made while the patient is taking rest in this position.

Excitation and stimulation of all the pelvic tissues result. Contractility follows, and after from four to eight weeks' treatment, says Brandt, success is obtained in from seventy to eighty per cent of cases; but if, after two weeks, the uterus does not remain in place, the author of this method gives up all hope of cure.

Much has been claimed by Brandt and his followers for massage in relieving fixation of the pelvic organs caused by the products of a bygone inflammation; but this is not to be undertaken until all the acute symptoms have passed and the physician is fully assured that there are no pus cavities anywhere within the pelvis. Hence the treatment is limited to inflammatory exudations and adhesions, when the treatment is said to stimulate the absorbents that their work may be performed with more facility and speed. All the salutary effects upon the circulation already referred to are, of course, simultaneously obtained.

Peripheral nerves are especially amenable to treatment by massage; hence neuralgiæ, especially hemicrania or migraine, are frequently relieved by such treatment.

Neurasthenia with its attendant train of symptoms deserves a thorough trial of all forms of massage in any plan of treatment; and even those who deny the existence of this disease, or who think this is a loose term, only covering a complex of symptoms, nevertheless lay down special rules for forms of massage to diminish or eradicate such symptoms.

Finally, in the line of general rules, twenty-four hours may usually intervene between each *séance* of thirty or forty minutes duration.

If massage is not given directly upon the naked skin, the

lightest clothing should intervene. Concerning lubrication of the skin the various authorities seem to be at odds; and when it comes to the question what force shall be used, much must be left to the sagacity of the manipulator and to the appreciation by the physician of age, nutrition, disease, temperament, and sensitiveness of the patient.

All these agents just considered require to be combined at times in the management of certain cases; this is not at all an easy thing to do in private practice, and it seems, therefore, expedient that a few words should be said regarding institutions where systematic treatment can be fully carried out. For this subject the reader is referred to page 155.

DIET IN DISEASE AND THERAPEUTICS.

There are certain articles of diet that are necessary and allowable in all cases in health and disease—water, for example.

Water should be pure. This all understand, and all should be as careful to have pure water as food, since the latter is cooked, whereby the deleterious matter—should any have existed—is wholly destroyed. This is not the place to describe how to discover impurities in water or the number of noxious elements that may be found therein. It is enough to say that water given to the sick should be boiled and filtered, unless it is known to be pure, and that this procedure should never be omitted.

Distilled water charged with carbonic-acid gas is even more agreeable than this.

Drinking-water for the sick may be medicated; we can acidulate it with cream of tartar, lemon juice, or any of the mineral acids indicated in a given case. Alkalies and alkaline salts may also be added in sufficient quantities to meet the demands of certain cases, and, in order to make the drink agreeable, charge it with carbonic-acid gas. I much prefer to prepare the water that my patients drink, and not to depend upon the mineral waters in the market, which may be all that is claimed for ordinary use, yet, not bearing the

guarantee of a reliable pharmacist, such waters may not be always reliable for the sick.

The great majority of people are so accustomed to drink regularly either tea, coffee, or both, that most sick people can take them almost as they can water. Hence they demand a word.

First, let me say that they are contraindicated in cases where there is hyperæsthesia, insomnia, and irritability, or at least they are then to be taken only in very small quantities.

In cases of exhaustion they are often the most reliable of mild stimulants; and while they may not be restoratives, in the therapeutic sense, they retard waste, preventing excessive destructive metamorphosis.

The difference in effect of tea and coffee is not so readily made out. Some believe that tea is more of a nerve sustainer, while coffee is more nutritious. That tea favors digestion, or at least is less likely to hamper it compared with coffee, seems to be the view of the majority.

There are no rules based on clinical experience for guidance. Tea agrees with some, coffee with others, and still others can not suffer either. Only the patient's past experience or a carefully conducted trial will suffice to determine.

In cases of shock after abdominal operations I have often found tea more invigorating and also more acceptable than any form of alcohol or meat extract. Again, while many agents and drugs depress bodily temperature, the active principle of tea is one of the very few that elevates it, and this is followed by no such fall as that ensuing after ingestion of alcoholic stimulants.

Alcohol in gynecology is seldom called for save after very serious operations, or in those who have been accustomed to it; and even then it is injurious if too long continued.

No form of alcohol can be expected to suit every case, or class of cases. Beer is the chosen and acceptable beverage for one, champagne for another, and for still another the distilled liquors with the charged waters.

Fluid Diet in Acute Cases.—In diseases running a short course it is only the kind and purity of food that need claim the physician's attention, not the quantity. The stomach is the part of the digestive system that in acute cases first becomes inefficient; solids and meats can not, therefore, be given. Milk, gruels, eggs in some fluid, and all the beef extracts are the foods usually given.

Milk is the best food in diseases accompanied with fever, despite its coagulation oftentimes in the intestinal canal, and notwithstanding it is indigestible for some people.

Milk must in all cases be boiled and then diluted, preferably with Vichy, Apollinaris, or distilled water charged with carbonic-acid gas. It is administered in small quantities, but at frequent intervals—two ounces of milk in two ounces of some water.

Whey is milk from which the caseine and much of the fat have been separated by coagulation and straining. It can be given when milk is disagreeable, and can be made more nutritious by the addition of beef juice or the beaten yolk of an egg. I use whey a great deal, and find it the most nourishing and easily appropriated food at my command.

Eggs are a complete food, containing, as milk does, all the elements necessary for the nutrition of the body. Beaten up with hot water and strained, they can be added to a clear soup or broth. An English method is to beat up an egg in a cup of hot tea. The Germans advise lightly boiled eggs beaten up in hot broth. They also use eggs in coffee.

Beef juices, beef extracts, meat infusions, and all the long list of similar articles now on the market are incontestably excellent in febrile, acute, and in many other conditions; but they are often abused. I believe they are too often given in a too concentrated form; that then they stimulate to the point of irritation. I know not a few who are as mentally exhilarated by a strong cup of beef tea as by an equal quantity of a mild sherry.

Dilute, then, all these extracts; and, further, flavor them with the expressed juice of fresh vegetables (carrots, parsnips,

etc.). Sir William Jenner thinks the vegetable juices a most valuable addition.

It will often be found beneficial to add the pulp or fine scrapings of meat to the dilute meat extracts or clear soups, and this is best in those cases not of the extremely acute type.

It is needless to say that calf's-foot jelly, rice and barley water, chocolate (deprived of fat), "fruit soups," oatmeal gruel, and the like are all of them good substitutes at times for some of the more concentrated foods.

Malt extracts and malted foods are only digested starches. As a rule, they consist of ground malt, wheat flour, bicarbonate of potash, and milk. Fats and salts are not well represented, or at least sufficiently represented, in these foods; hence it is necessary to add them.

Pepsin, the proteolytic ferment of the gastric juice, is too well known to demand more than the passing statement that its judicious addition to food in acute cases is frequently a large factor in restoration to health.

Among predigested foods foremost stands pancreatin and peptonized foods. The latter—artificially digested albuminates—are highly nutritious, but oftentimes obnoxious on account of their smell and taste. So many pancreatic extracts are now found that the peptonized foods are easily made in the sick-room. Peptonized milk and peptonized milk gruel (according to Sir William Roberts's rule) are excellent predigested foods—perhaps as valuable as peptonized beef extracts.

A form of extra and well-nigh continuous feeding that is popularly known as "forced feeding" demands attention. This begins by the patient being put for about a week on a milk diet—three or four ounces every two hours, increased in a few days to two quarts in twenty-four hours, given in divided doses. Should there be any constipation, a mild aloes pill at night, or a cup of hot coffee on waking, may be given.

At the end of a week they are permitted a light breakfast, and soon are given three good meals a day in addition to two

quarts of milk taken at or between meals. At this time, too, "raw" beef soup, to which has been added a small quantity of strong hydrochloric acid, cocoa, a quantity of butter, and perhaps half an ounce of cod-liver oil after each meal, with a small quantity of champagne, Burgundy, or whisky.

The urine must often be examined in "forced-fed" patients; and when urates begin to be deposited it is time to go back to the simple milk diet for two or three days, or to reduce the quantity of food. Very often attacks of diarrhœa and dyspepsia may attend this process of forced feeding. They are usually checked by immediately administering a half-diet.

Debove's "alimentation forcée" is to introduce by the *œsophageal tube* an excess of food into the stomach, where this excess is retained and digested, while previously all food was rejected, much less digested. This observer states that he found no relationship between appetite and digestive power. Powdered raw meat (1,500 to 6,000 grains a day) can be given best through the œsophageal tube, and this is the form of feeding now in vogue in France.

A *vegetable diet* can be either full or spare. This form of diet consists principally of vegetables and fruits and a modicum of milk and eggs, unless an absolutely meager—"low"—diet is demanded so as to obtain a certain degree of starvation. When this last is required, the purely vegetable diet will give a sufficient bulk of food, although it is an excessive tax upon all the organs of digestion, especially in this country, where all the inhabitants are habituated to a diet in which meat plays so important a part.

With this diet patients complain and suffer much from the indigestion that ensues, so that I frequently have to administer diastase (I prefer Forbes's) in order to relieve this attendant.

In *sexual plethora* this is in reality an advantage, because the desired nonstimulating effect of a vegetable diet is obtained, and the nerve forces and thoughts are directed from the pelvic organs to the digestive system. Hence a little

indigestion is not at all bad, and, if not the pleasantest of diversions, it becomes at least a beneficial one.

In the diet now under discussion there are certain objectionable articles for those of feeble digestion, chiefly the bulky, watery foods without much of the nutritious in their composition, such as cabbage and turnips. Moreover, articles rich in starch can not be given to such patients, for fear of the results of excessive fermentation. This last-named variety of food can not be given to those who have much more adipose tissue than strength, because of their fat-forming tendencies.

A *spare diet* may consist of mixed food or wholly of vegetables. In those who are dyspeptic and feeble the mixed spare diet must at first be employed ; but those who are more robust and possess fair digestive ability are not to have any animal food. The great point, however, is the limitation of that quantity which can be thoroughly digested and assimilated both primarily and secondarily.

It is chiefly in cases of oppression—often mistaken for exhaustion—where rest and forced feeding do so much more harm than good, that I find the spare diet extremely advantageous.

Concerning *excrementitious plethora*, all that has just been said about "low," "meager," or "spare" dieting holds good, save that in the majority of these cases I permit a very limited quantity of animal food.

So often is excrementitious plethora allied with the related diatheses of gout, rheumatism, diabetes, and the adipose tendency, that we must modify the diet so as to antagonize latent conditions whose appearance along with excrementitious plethora would amount to grave complications.

Finally, there are certain foods that must be omitted from the diet of the sick ; but it is exceedingly difficult to make a list of articles that we must at all times taboo.

On general principles I should advise the omission of veal, young lamb, pork (save in small quantities), duck, goose, fat and oily fish (especially the salmon and mackerel species), cabbage, cauliflower, cucumbers, and turnips; and nuts,

dried fruits, or those fruits that are too richly preserved or seasoned.

It is, however, a notorious fact that very many things that disagree with the majority act quite the reverse with the minority; and some confirmed dyspeptics, who suffer after eating the most wholesome articles, can eat veal, cheese, or pork with relish and advantage.

I begin by using those articles that are wholesome and digestible, and subsequently carefully extend the bill of fare, lastly trying the more doubtful articles.

Much aid, too, is given by the history of special cases. Nearly every one not mentally or physically perverted can pretty accurately tell what will agree or disagree; and though there are many exceptions to it, I believe this rule is in the main correct and reliable: what one craves and relishes usually agrees, unless the bad habit of faulty eating has created an artificial desire.

It is beyond the scope of the present work to discuss the value of the *grape cure* in abdominal plethora; the *koumiss cure* in tuberculosis and phthisis; or the *whey cure* in laryngeal and bronchial diseases. Nor is here the place to discuss in detail the *Banting system*, on the diet in gout or in diabetes.

For obesity many diets have been prepared, but they all are very much alike. It is more convenient to give the things to be avoided than to give those that should be used. The fats, sugar, and starch should be avoided altogether or used but sparingly. Fluids of all kinds should be used in small quantities. Wine, beer, tea, coffee, cocoa, and chocolate should not be used at all. There are many who will not lose flesh upon any kind of diet. In such cases exercise, mental and physical, should be taken in connection with the proper diet.

DIET FOR AGED WOMEN.

Food should be given five or six times a day.

Avoid the popular error of giving more food in old age because weakness and loss of flesh are noticed.

Milk in "second childhood" is very useful and should be freely given unless contraindicated by gastric catarrh or special peculiarities.

1. *On rising.*—Warm milk with limewater, or a glass of hot water with beef extract or juice.

2. *Breakfast.*—Weak tea, milk, fresh eggs lightly cooked, a chop not too well done, stale bread, with but little if any butter.

3. *Luncheon.*—Oysters, and, if no meat has been taken for breakfast, a chop or piece of mutton, an egg, and stale bread, with a glass of sherry; or fresh broth, a sandwich of grilled fowl or roast beef, a glass of sherry or ale, and bread. Fruit, such as grapes, figs, apples, peaches, or the like, in small quantity.

4. *Dinner.*—Light, non-oily fish, mutton or beef (rare), tripe, birds, baked potatoes, light vegetables, and bread. Claret, sherry, or brandy and soda.

5. *Bedtime.*—Dry biscuit, with milk or arrowroot or oatmeal gruel.

Things to be avoided or taken sparingly in advanced life.

Use sparingly.—Much liquids at meals. Broths containing vegetables. Butter and cheese. Tea, coffee, cocoa (best taken an hour after meals). Fermented liquors often disagree.

Avoid.—Overdone and well-done meat, fresh bread, cabbage, carrots, turnips, veal, pork, salt meats, pastry, and salads; shellfish, except oysters, lobsters, crabs, salmon, eels, mackerel, and all rich, oily fish.

CHAPTER XIII.

MENTAL THERAPEUTICS AND INSTITUTIONAL TREATMENT.

MENTAL THERAPEUTICS.

I have chosen the title Mental Therapeutics for the subject of such remarks as may seem appropriate in this connection.

There is the more reason why this subject should be discussed because during the last decade considerable attention has been given to it by some of the most scientific men in the profession. There is still very little known on the subject, compared with what should be in order to utilize this agency more fully in the practice of medicine.

From the very beginning of the healing art a certain mental or psychological power or influence has been known and exercised in curing the sick. In early times certain men claimed possession of a divine power by which they influenced other minds and produced appreciable results. Up to the beginning of the Christian era this was believed to be a divine power. After that it lost its reputation for divine origin, and was supposed to be a form of witchcraft having its origin with the Evil One. Within the past century scientific men have taken up the subject and endeavored to place it upon a scientific basis. Braide, of England, and Mesmer, Liebault, and Charcot, in France, have done much in these modern times to explain this mental or psychological power and to render it useful in healing the sick. By these investigators certain names have been given to it—mesmerism, after Mesmer; electrobiology, by Braide; and by the French schools of Paris and Nancy it has been called hypnotism, and by that name it is generally known in the profession to-

day. The names, however, give no definite idea of the subject. So far as I can ascertain, hypnotism is simply a certain influence which one mind has or can exercise over another mind, and also the influence of one's own mind upon one's body.

The latest explanation of this interchangeable mental action or influence is, that each being possesses two minds, one objective and the other subjective. The objective mind is the one which brings the being into relation with things around him—the acting and reasoning mind in relation to environment. The other, the subjective mind, is the one possessing memory and extraordinary powers of influencing the body and in communing with other minds. This hypothesis, upon which hypnotism or mental therapeutics is based, may or may not be correct, but it answers the purpose of enabling one to explain this psychological phenomenon or mental action perhaps better than any other.

This peculiar influence of one mind upon another, or the communion of minds one with another, is a faculty common to all; but some have it in such a limited degree as to be unnoticeable, while in others it is possessed to an extraordinary degree. The method of communication differs from the ordinary means in the fact that the transference of impressions or influences from one mind to another may take place without any of the physical means of communication, such as spoken words, facial expressions, or gestures.

This power has long been recognized and has been employed in the practice of medicine, and every one who has given any attention to the subject knows that such an influence is possessed. Some medical men possess it in a high degree, others scarcely at all. Those who are noted for their ability in this direction are spoken of as being very magnetic, or possessing wonderful tact in first attracting the attention of patients and concentrating their thoughts, then gaining their confidence and rendering them subservient to the will of the practitioner.

This ability to inspire confidence and obtain control over

patients is the mental therapeutics of every-day practice, and to that extent, when employed in its highest perfection, is of much possible value.

The way in which this mental influence operates is said to be by suggestion. The operator thinks earnestly and strongly desires to impress a certain thought upon another mind, and it is communicated by what is known as telepathy, or the transference of ideas. It may be done orally by stating in a positive, confident manner that another will do or believe a certain thing. This is sufficient to direct the mind of the percipient in a certain channel, and his mind acts accordingly.

It is claimed that this suggestion—telepathy, or mind influence—acts much more effectively in sleep. Hence, to practice mental therapeutics in its highest integrity, it is necessary to produce a certain form or degree of sleep in the subject to be acted upon. Therefore the patient is *hypnotized.*

There are various ways of producing this hypnotic sleep, and there are also several degrees of the state. Mesmer hypnotized his subjects by gazing steadfastly into their eyes and making certain passes with the hands over the head, and when they became drowsy, suggesting to them that they were asleep, or would go to sleep, by telling them so. This gave rise to the belief that the hypnotic sleep was produced, and indeed that all the influences were produced by a certain animal magnetism or magnetic fluid which was communicated from the operator to the patient. Braide and others discovered that the hypnotic sleep could be caused by the patient fixing his eyes upon a bright object, and by suggestions of the operator that he would go to sleep. Others have succeeded by suggestion alone, like Liebault, who produces the hypnotic sleep by oral suggestion, simply telling the patient that if he will make up his mind to go to sleep he will, and then repeating that he is going, and that he has gone, to sleep.

There are different degrees of this hypnotic sleep. These are known as the cataleptic state, the lethargic state, and the

somnambulistic state. These seem to be but different degrees of the same sleep, and, so far as scientists have yet discovered, there is no known difference between the hypnotic, or the sleep produced by the will of the hypnotizer, and natural sleep, which comes in the ordinary way; and quite recently it has been stated that in natural sleep, not produced, the mental influences by suggestion or telepathy can be exercised just as well as in a produced sleep—hypnotic state.

The question which specially concerns us at the present time is, In what way can this mind influence, exercised when the subject is asleep or hypnotized, be made effectual in curing disease? Accepting the idea that one in this condition is so under the control of the physician or operator that his mind can believe anything suggested to it, and can make extraordinary efforts to accomplish any object or end suggested, it is evident that the innervation of any of the physical structures can be greatly modified by this influence. It is a known fact that if one is under the psychological or mental influence of another, especially in the hypnotic state, and the operator suggests to the patient to change the circulation in a given part of the body, the blood supply will be modified accordingly. By suggesting to one who is hypnotized that a given part of the body is burning, it will become strongly congested. In fact, it is claimed that blisters have been raised in this condition and by this mental influence. Such being the case, if a hypnotized patient has the suggestion made that an organ or tissue of the body in which there is deranged circulation, probably arising from deranged innervation, will be relieved, the mind of the patient will so adjust the innervation of the organ or tissue as to give relief. In this respect hypnotism or mind influence is one of the most powerful agents in curing functional diseases.

All diseases, then, that are not organic can be relieved, oftentimes cured, by this mental influence or mental therapeutics. It is limited, I believe, to just that class of diseases. It would be a waste of time to enumerate them, because they will readily occur to the reader.

It may be claimed—in fact is claimed—by the advocates of this hypnotism or mental therapeutics that organic diseases can also be cured. That, of course, would greatly depend upon the character of the organic disease and the extent of its progress. It is fair to say that any organic disease that is not curable by any of the ordinary known agencies or the ordinary vital recuperative forces would not be at all aided or relieved by hypnotism or mental therapeutics.

There is another question which arises, and one that I think has not yet been settled, and that is: Can anything be done by mental therapeutics that can not be done by other means and just as well? To this I may say that if there are any such diseases curable in such way, they are exceedingly limited, and they are only curable by mental therapeutics when they occur in certain organizations, imaginative and hysterical subjects especially.

Another question is, Does not the mental wear and tear of the patient's mind in acting upon matter, with a view to relieving morbid states, do as much harm as the effort at curing or relieving does good? I think that in the majority of cases the exhaustion of the nervous system is not marked, and that one can be placed in the hypnotic state, or, as some have the power to do, can hypnotize themselves without much exhaustion apparently following.

I therefore fully believe in, and have long practiced, this mental therapeutics, so far as suggestion is concerned. Every physician knows that if he can only get his patients to cooperate with him in the management of their diseases they do better. "Faith is half the battle in the cure of disease" is an old saying that all believe, in part at least, and no doubt it is true. If a patient, through the confidence he places in his physician and through the strong mental power of the physician, is fully persuaded that he is going to recover, he will certainly have greatly improved innervation —that innervation which plays such an important part in maintaining health and in the relief of certain morbid conditions. And certainly it can be judiciously stated that

mental therapeutic agencies, if brought to act in connection with other means of curing disease, possess very great value.

That mental therapeutics or mind curing is exceedingly limited and is imperfectly understood, and is far from accomplishing all that is claimed for it by its enthusiastic advocates outside the profession, must be accepted as fact. Scientific men of the profession who have employed this, and who have obtained remarkable results in the cure of functional diseases, claim nothing extraordinary.

This leads me to say a word with reference to the use of mental therapeutics or hypnotism by the laity, who call it "Christian Science," "Faith Cure," "Mind Cure," and the like.

This popular cure, as practiced by the laity, is little more or less than a craze, which has come to do some good and much harm for a time, and then to disappear, as all things of the kind have done.

In order to deal fairly with those among the laity who practice the healing art in this way, it must be said that some of them, no doubt, have acquired the faculty of doing good by means of this mental influence. I presume that the "Christian scientists" accidentally stumbled upon this hypnotic influence or power, and some effects in the healing of the sick were observed, and they continue to practice in black darkness, hoping to accomplish great things in the cure of all diseases. A sad, pitiful show they make of themselves when trying to do impossible things. While they are doing an endless amount of harm, they do good occasionally; but it is by accident. When by chance they get hold of a case that can be relieved by hypnotic suggestion, and they succeed in hypnotizing the sufferer, they may do good. But the harm they do far outbalances the good in their efforts to do impossible things by using their faith cure in cases that can not be helped by it, and by keeping the poor sufferers from proper treatment. They offend against the right in this way, as all charlatans do, by insisting on being able to cure

all diseases by one agent, the power of which is very limited and only applicable to a few diseases. They should be suppressed. Who would dare to permit an ignorant person to operate in surgical cases simply because that one had the impertinence to suppose he was a surgeon?

If these faith curists, Christian scientists, or whatever they may be called, understood hypnotism and could use it under the direction of a physician who could give them selected cases and direct them how to do, they might be of some service, just as those who give massage or gymnastic exercises can relieve suffering. But as they are and as they practice they are a bane to the world. In order to get rid of them, the medical profession must point out their true position, giving them credit for the good that is in them, and condemning justly their wrongdoings.

Those who with good intent try to cure the sick by prayer do good, and are helpful in certain cases. Prayer is a therapeutic agent; the hypnotic state can be induced by prayer, and when employed in proper cases and including the right suggestion, is a curative agent of value in certain diseases. An earnest prayer for a given person may, through mental influence and suggestion, relieve that person. If relief is sought in prayer, and it is possible that it can be obtained through hypnotism, that prayer will be answered. The laws of psychology and physiology are so arranged that certain prayers are answered and others are not. This is the only scientific explanation of the efficacy of prayer in healing the sick that I can find.

When Tyndall proposed to try the treatment of a certain number of patients in a hospital with prayer, and an equal number in the usual way, in order to ascertain the value of prayer in the healing of the sick, he was denounced by many good, well-meaning men, and called a scoffer and an unbeliever. I am sure that he was neither. He was only seeking the truth. Medical men know very well that prayer is without avail in some diseases, and believers are equally sure that prayer is able to aid in the cure of disease. Both are right

to a limited extent. Prayer is a means of producing a mental state, in which certain suggestions become active and modify the innervation and circulation in diseased organs and tissues of the body. Physical changes must necessarily follow, and certain affections are cured thereby as surely as by drugs or anything else.

But all this that we hear about the *marvelous*, the *wonderful*, the *miraculous* cures that are produced by the ignorant practitioners of faith cure or Christian science, or mind cure, has so little in it that it is hardly worth the attention of any medical man. They know nothing of what they are doing or how they do it; and because some cases recover that they treat in their own peculiar way, they are encouraged to believe that they are omnipotent.

I have carefully watched this practice among the laity, and have honestly endeavored to give them credit for all that they deserve, and I am bound to say that I have found nothing of the wonderful, marvelous, and miraculous, except the failures which they make, as a rule, with an occasional success; so that the good they do is buried out of sight under a heap of mischief.

THE MANAGEMENT OF DISEASES OF WOMEN IN INSTITUTIONS DESIGNED FOR THAT PURPOSE.

In discussing the institutional treatment of the sick I desire to have it distinctly understood that I refer only to such private hospitals as are constructed upon the most scientific principles and conducted by those who look fully to the highest interests of patients committed to their care. Boarding houses managed on a commercial basis are, as a rule, inferior to home for those who are ill.

To carry out a systematic course of treatment, in chronic cases especially, is always difficult—sometimes impossible—in private practice. It is hard to obtain the necessary seclusion, rest, and control in a private house amid family surroundings. Nowadays a competent nurse can be obtained, but home and family interests and the interference of rela-

tives and friends thwart the efforts of physician and nurse in carrying out that which is requisite and necessary.

Those who have had experience in the management of diseases of long standing and in surgical cases know very well that they can have better treatment in proper institutions than in private houses. This has been fully demonstrated, and the tendency of the present age appears to be more and more toward the establishment and encouragement of such institutions.

There is among the people still some prejudice against institutions for the care of the sick, but this arises from the fact that such places have been used in the past for the poor only. The very poverty of such hospitals has often led to misusage in overcrowding, poor feeding, poor nursing, and so on. But the principle of having institutions for the care of the sick is sound. Now that there are proper places for the care of the sick, the rich and intelligent are beginning to see the advantages of them. There are certainly as good reasons for rich and intelligent parents to send their sons or daughters to institutions for the treatment of disease, or to schools for physical culture, as to send them to boarding schools for education.

The advantages of such institutions are many. They can be constructed upon the best sanitary principles and adapted to the wants of the sick. The progress in sanitary architecture made in recent times makes it possible to construct a building which will, to a large extent, guard the inmates from the causes of disease which are generated by their own eliminations. Such a building can also be adapted to the requirements and comforts of the sick. A house suited for a family home is not well adapted to the accommodation of patients. The order and government of such a hospital can be made agreeable to the suffering inmates, both as regards quiet and also cleanliness, which include sewerage and ventilation. Diet also can be regulated according to the laws of health, and made agreeable and tempting to the capricious appetites of patients. When the sole object of the establish-

ments is to improve the health of those who dwell in them, and where the physician and surgeon and their attendants have the controlling power, a condition of hygiene is secured which is all but impossible in a private family.

In such an establishment the doctor has great advantages. His patients being brought together, he can attend a larger number in a shorter time. He has also a more perfect control of all their doings. In this country and in Europe we find that the foremost men among specialists have their private institutions for the care of their patients. That such institutions are successful and advantageous to patients and physician is a fact beyond all question. That more of them are needed is also a fact, the proof of which is found in another fact—viz., the prosperity of institutions under the care of half-educated men who practically carry out but one idea in the treatment of diseases, like hydropathic and cancer cure establishments, for example. For many years such places have been crowded by invalids in search of health. Rather than waste energy in declaiming against such places, it would be better for the profession to recognize the good that is in them and erect institutions upon proper scientific principles to take the place of those which have for a long time been the only resorts open to responsible sick people.

There is still another argument in favor of such institutions, and that is, the progress in the science and art which has been made in hospitals in the past history of the world. Much of all that is valuable in medicine and surgery has originated in hospitals and charity institutions. The Women's Hospital and other institutions in New York, for example, have given more to the surgery of gynecology than all the private practitioners in the world. This statement, which is rather sweeping, is not intended to take from the honor due to those who are wholly engaged in private practice. Those who have hospitals at their command have no more brains than those who have not, but the advantages of the one class afford the opportunities of developing new ideas in practice which can not be obtained in private practice—at least to the

same extent. The history of medicine and surgery abundantly shows that the leaders in the profession have been men who enjoyed the advantage of hospital practice. True, the hospitals in which these men have labored have been charity institutions, many of them poorly adapted to the wants of patients. In fact, at the present time, many of our hospitals are so poor that the physicians and surgeons are hampered in their efforts, and still the results obtained are, in many cases, equal or superior to those obtained in private practice. In our best charity hospitals the patients obtain better chances than the rich do in their luxurious homes. It is now surely true that the rich, or well-to-do people, who are able to pay for proper care when they are sick, should have the advantages which the poor irresponsibles enjoy.

This argument may call up the counter-statement that there are dangers in hospitals unknown in private houses. This is true of some hospitals. The crowding together of all kinds of diseases and injuries in rooms that are too small and badly constructed tends to develop and spread diseases; but in structures built upon sanitary principles, in which diseases and injuries are properly classified, all these dangers can be avoided.

We have health resorts, so called, where the sick may go in summer and winter, but they are mostly away from the cities and out of the reach of those who most need them. They are also under the control of hotel keepers, who can not make their houses to fully suit the demands of the really sick. In discussing general therapeutics it seems proper and right to say a word in favor of institutions in our cities under the management of responsible members of the medical profession, in which those who need special care can have all that science and art can afford them.

CHAPTER XIV.

METHODS OF EXAMINING PATIENTS.

The art of taking a history with a view to diagnosis, the varied methods of examination of patients, the *modus* or technique of inspection, palpation, percussion, auscultation, and mensuration, and their valuation when associated with symptoms given us by the patients themselves (rational or subjective symptoms), are all fully discussed in text-books on medicine, surgery, and special treatises on physical diagnosis.

In every systematic description of a disease the physical signs are given, frequently forming the sole data upon which a certain diagnosis can be made. Nowhere else are physical signs so important as in diseases of women, although here it is unnecessary to enter into an elaborate discussion of the elementary portion of the subject.

It is taken for granted that my readers are fully conversant with the rudiments of physical investigation, but it can not be too thoroughly impressed that, to be a skilful diagnostician in a special branch, one must have a complete and rigid drill in general diagnosis.

It is not possible to distinguish with surety any disease of the sexual organs, and to observe its relations with and dependence upon the general system, without being an expert in general investigation. There are, however, certain definite principles which should guide the physician in his investigations in women's diseases.

Hence that method for obtaining information and the explanations for utilizing such information must be of prime

consideration in the present work. I feel that the best plan is that which can simplify and classify methods of observation; which, at the same time, affords the best deductions adapted to the gynecologist.

The method that I follow is one that seems to me straightforward and logical, beginning as it does with the most general view of woman, and narrowing down until the specific disorder—should there be one—is discovered.

First, the examiner should have in mind, a typical woman—a woman who is healthy; and I believe that every one—student and physician—should acquire the power to detect all the evidences of a sound organization in a healthful state.

Secondly, the temperament should next be discovered, for upon its full comprehension much depends, especially as concerns the prognosis and treatment. In the examination of patients I prefer to keep in mind the classification of temperament as indicated by structure—i. e., the sanguine, nervous, phlegmatic, and motor or muscular. Temperament indicates a liability rather than a predisposition to certain diseases. The subjects of nervous temperament are more prone to diseases of the nervous system; the muscular or motor to diseases and injuries of the muscular system, and so on.

The diagnosis of the predisposition to disease, by reason of imperfect or abnormal structure, depends so much upon the temperament that the necessity of obtaining a distinct notion in one's own mind as to what particular class the patient should be placed in is well-nigh self-evident.

Predisposition to disease is frequently discovered by inquiry as to the past life. At times the immediate family can give us data, especially in the line of hereditary tendency; but still I believe that the general character of predisposition is greatly determined by the temperament which has already been discussed at length.

Age as a factor in causation, prognosis, and treatment is a point never to be neglected in a physical examination, for

we can call it physical, even if elicited by questioning from the patient. I do not mean by age the number of years that have elapsed since birth, but rather the general bodily condition, whether youthful, active, or senile. The examiner should remember how foolhardy it is to seek roses in November or ice in June.

Fourthly, all evidence of disease should next be gathered; general or constitutional conditions should be looked for, and subsequently local lesions or derangements can be the subject of search.

There are many diatheses or dyscrasiæ—the gouty, the rheumatic, the strumous, the fibroid, the diabetic, the hæmorrhagic, the neuropathic, the psychotic, and the tuberculous—all of which have manifestations now prominent and unmistakable, again subtle and evasive. Moreover, they are interchangeable. I have seen gouty parents have rheumatic offspring, who in turn had children who were enormously fat; and the progeny of the latter diabetic.

I have seen the rheumatic, gouty, and fibroid diatheses intermingle and interchange. The rheumatic and the neuropathic sometimes combine, but more often do the psychotic and neuropathic become allied.

The *hæmorrhagic* diathesis is one where, in childhood, black and blue spots often appear quite independent of any bump or bruise, where excessive bleeding followed trivial wounds or blows, and where, after puberty, menorrhagia thrives. Hæmophiles, as they are called, are usually fat, have an abnormally small heart, and are quite often chlorotic.

Those of a *gouty* diathesis have acid urine and perspiration, are generally of a full habit, with a good deal of flesh, have a persistent plethora of the digestive organs, and their kidneys, as a rule, act imperfectly. Despite these evidences, the diathesis is not always recognizable.

Those of a *rheumatic* diathesis have an excess of fibrin (or fibrin factors) and lactic acid in the blood. We can best make out this diathesis by eliciting their hereditary history and by questioning those who know them concerning former

attacks. Very often the exact diagnosis is made only by an examination of the state of the blood. Rheumatism is often caused by, occurs with, or follows the puerperal state and diseases of the sexual organs.

The *fibroid* diathesis has much in common both with the gouty and with the rheumatic. Perhaps an abnormally persistent, tense pulse and prematurely hard arteries might lead us to anticipate the diagnosis, which, however, can only be made out when the heart has undergone hypertrophy and the kidneys have become cirrhotic. This occurs later in life, usually about the time of the menopause.

The *scrofulous* is closely connected with the *tuberculous* diathesis. The glands are chiefly involved. Scrofulous subjects have a light, fair complexion, often of a waxy hue; they are pale and, as a rule, fleshy. The mucous membranes are well-nigh bloodless, soft, and irregular. The tonsils are enlarged, or have a marked tendency to enlargement. The lymphatic glands, especially those of the maxillary region, enlarge and are prone to suppurate. Their teeth are poor and, as a rule, long. The head is large—notably so—and the eye is clear. During infancy and childhood they have frequent "sore throat" and attacks of bronchitis. Very often they exhibit evidences of anæmia and have acute attacks of indigestion.

The *tuberculous* are thin; their blood-corpuscles are deficient in every way; their heads narrow at the base and quite long; they have a nervous or intellectual temperament, and are "quick" in studies but "delicate." Their lower jaw is long, thin, and pointed, the features are small and well defined, the nostrils thin, and usually they have blue eyes. They seldom in early life have lung evidences of disease, and their chief general characteristics resemble those of scrofulous children.

The diathesis is not of so great value in the diagnosis as in the prognosis, since all diathetic individuals are liable to disease of the sexual organs, and when this last does occur, the latent disease—or diathesis—then, and then only, appears

with peculiar complications which are very apparent and at times diagnostic.

The *local* evidences of disease are legion. Here the thoroughness and individuality of the examiner must come in. No rule can be laid down that will make a man thorough and alert.

The *fifth* point to determine is whether the local condition —if any exist—merely preceded the constitutional disorder; whether it preceded and caused it too; whether it followed it as a result or not; in short, to determine what is the interdependence of the local and general conditions.

The *sixth* point in the system that I adopt when making a physical examination concerns the specific symptoms of diseases of the sexual organs. It is at this point that the diagnostic field narrows down from general to local; and it is perhaps at this point also that the knowledge of the specialist comes prominently into evidence.

However unreasonable, however inexplicable, the fact nevertheless confronts us that the only maladies women are ashamed of are those of the sexual organs; hence the tactical and diplomatic investigator has in this line of practice an immense advantage over him whose attack is brutal and direct.

Since the symptoms are given in connection with each case and disease, I shall here only offer suggestions concerning the method or technique of the examinations, endeavoring to clearly show how to make full use of all the data thus obtained for the determination of the diagnosis.

The order of examination should be *inspection*, *palpation*, *percussion*, *auscultation*, and *mensuration*, and the physical signs in health and disease of all the organs of the body should be well understood by the physician who practices gynecology. It is not enough to detect disease of the sexual organs; one must determine the condition of the whole organization in order to decide regarding the general health as affected by the local disease, complicating diseases, or functional derangements of the general system.

The physical signs and diagnoses of thoracic diseases and constitutional affections are sufficiently discussed in text-books and lecture courses, hence I pass over them. But the physical signs of the abdomen and pelvis require special consideration by those who would practice gynecology, and a short discussion of the subject is fitting here.

The abdomen must be thoroughly exposed, the patient resting on a firm bed or couch with the shoulders low and the lower limbs extended, especially if free fluid is suspected in the peritonæum.

Inspection gives the general appearance of the abdomen as to shape, thickness of wall, œdema, the look of the umbilicus, a swelling at any part, and color.

Palpation should be gently made with warm hands which move steadily and evenly. Rough manipulation may cause peritonitis, even without rupture of something within the abdomen. Palpation discovers consistence, solidity, fluidity, regularity or irregularity, immobility or degree of mobility, or degree of sensitiveness of any swelling or growth. Much information is gleaned from a bimanual examination.

Percussion, both superficial and deep, usually reveals the same state of affairs as careful palpation, but is a more certain means of observing the solidity of a tumor and whether there is present fluid, air, or both.

Auscultation of the abdomen is not of much importance except when resorted to to determine, for instance, whether a tumor is pregnancy or an aneurism.

Mensuration tells the difference in size in the two lateral halves of the body, and in measuring the tape should be placed in the median line of the back and brought evenly around to a point directly opposite anteriorly. When the other side is measured, great care must be taken that the second measuring is done at the same time of breathing as the first.

For convenience of description of its contents, the abdomen is divided into nine spaces by two horizontal and two vertical lines.

The upper transverse line crosses the abdomen at a level with the most prominent part of the ninth costal cartilages, while the lower line joins the crests of the ilia, as seen from the front. The vertical lines are drawn upward from the middle of Poupart's ligaments.

The spaces thus mapped out are the right and left hypochondriac with the epigastric between them; below are the right and left lumbar with the umbilical between them; and the inferior spaces are the right and left iliac with the hypogastric between them.

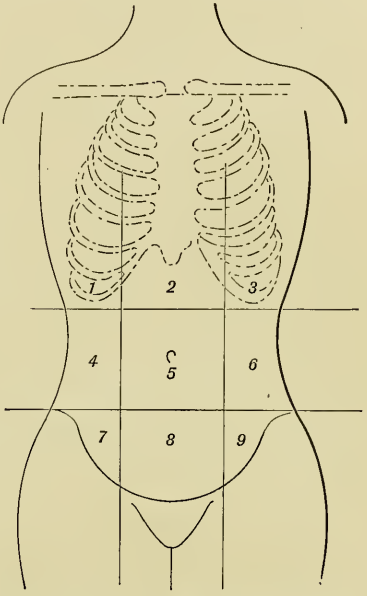

FIG. 12.—1, 3, right and left hypochondriac; 2, hypogastric; 4, 6, right and left lumbar; 5, umbilical: 7, right iliac; 8, epigastric; 9, left iliac regions.

The *right hypochondriac region* contains a large part of the liver, the gall bladder, part of the right kidney, and a small part of the colon where the ascending and transverse portions join.

Percussion and palpation are the means of mapping out the liver in this region.

The gall bladder, normally, can not be felt; but it is located with its fundus below the ninth right costal cartilage, and the line of its distention is from the situation of its fundus to the umbilicus.

Pressed between the two hands, one in front and the other at the back, the gall bladder will be tense if filled with fluid, and very irregular if filled with calculi.

Percussion for gall-bladder diseases is well-nigh useless.

The *epigastric region* contains part of the liver, part of the stomach and both its orifices, part of the duodenum, the pancreas, the cœliac axis, and, possibly, a small part of both kidneys.

The liver's position is variable, depending upon the condition of the stomach. It is to be recollected that the liver is enlarged, and therefore its area of percussion dullness increased, in fatty and waxy degeneration, in the first stage of cirrhosis, in congestion, in tuberculosis, cancer, abscess, and hydatids. In one of these—*waxy liver*—a sharp, firm edge is made out on palpation.

Local enlargements may be due to cancer, syphilis, or abscess and hydatids.

Palpation and percussion reveal an irregular margin, and at times nodules can be felt.

Gummata or syphiloma of the liver are sometimes tumors in the center of which there is a depression which can be felt.

The *stomach's* position here is most variable ; indeed, this organ is usually in the region immediately below. Palpation reveals a hard, solid, movable tumor in most cases of malignant gastric disease. Percussion affords data regarding distention.

Sometimes foreign bodies are swallowed and they may be mapped out through the abdominal walls.

Pancreatic tumors, cysts or not, may be revealed on careful palpation in any one of the regions in the upper layer, so variable is their direction of growth.

At times aortic pulsation can be felt through a pancreatic tumor.

Percussion for pancreatic growths is unreliable. A pulsating tumor, expansile in character and revealing on auscultation a well-marked *bruit*, tells of an aneurism probably of, or about, the cœliac axis.

In the *left hypochondriac region* are the spleen, fundus of the stomach, part of the left kidney and its capsule, tail of the pancreas, small part of the liver, and the splenic flexure of the colon.

Palpation can not reveal a normal spleen, but *percussion* from behind shows it lying between the ninth and eleventh ribs.

Accumulations of fluid in the pleural cavity may push

down the spleen, and the organ may be enlarged in leucocythæmia, lymphadenoma, malaria (ague cake), waxy degeneration, cancer, cysts, splenitis, and simple hypertrophy. Notches can be felt on an enlarged spleen, and on percussion the area of dullness will be found increased in proportion to the size of the tumor. It is greatest of all in malaria.

I have known the spleen in malaria to double its size in forty-eight hours from the onset of the paroxysm. A very good diagnostitian in general medicine sent me a case of enlarged and dislocated spleen which he diagnosed as an ovarian or fibroid tumor. I have seen another case where the spleen was impacted in the pelvis, and was taken to be a uterine fibroid. A dislocated spleen has been mistaken for a wandering kidney.

The right lumbar region contains the lower part of the kidney, part of the ascending colon, and some coils of small intestine. The kidney is very mobile and often sinks down on the slightest enlargement.

The kidney can be felt, unless fat prevents, by putting one hand flat on the abdomen outside of the rectus muscle and the other behind, outside the erector-spinæ muscle, below the margin of the ribs, when the patient takes a deep inspiration.

Enlarged kidney may be due to fatty or waxy degeneration, first stage of Bright's disease, in hydronephrosis and pyonephrosis, congestion, and at times in renal calculi. Cancer, abscess, hydatids, and perinephritic abscess will also cause it. The line of kidney enlargement is down and toward the front. A small enlargement can be distinguished from a large gall bladder by being posterior.

As the size increases, the kidney comes from underneath the ribs, the colon over it, and *percussion* elicits a clear note, unless this piece of bowel be collapsed, in which case a thick band may be felt on careful palpation.

In the *umbilical region* lie the omentum, most of the small intestine, the colon, aorta, and possibly a small part of the right kidney.

The omentum may be felt as an irregular mass from inflammation, tuberculosis, cysts, hydatids, or cancer. *Percussion* reveals dullness in those diseases, and there is fixation also.

Fæcal accumulations in the colon, or cancer, may induce a tumor along the line of the colon.

Palpation and percussion afford proof of the existence of a tumor of the small intestine, but never any hint of its nature.

An aortic aneurism would present typical expansile pulsation on palpation; and upon auscultation the diagnostic *bruit* would be found.

In the *left lumbar region* are the descending colon and some of the small intestine. A left kidney can not be palpated, normally, as the one on the right side; but when it enlarges, all that has been said concerning the right kidney holds true.

The splenic flexure of the colon is sometimes the seat of cancer, and its tumor may be mistaken for that of an enlarged spleen.

In the *right iliac region* are the cæcum, with the appendix and part of the ascending colon. In this region may appear cancer of the cæcum, or distended appendix, from inflammation, with all the sequelæ of appendicitis and masses of impacted fæces.

A dilated appendix has a variable position, being sometimes, also, in the right lumbar or umbilical region. Its shape and size are like those of the forefinger; it is very sensitive, McBurney's point being the most sensitive spot; it is midway between the umbilicus and the anterior superior spine of the ilium—i. e., where the appendix joins the cæcum. When an abscess has resulted from appendicitis, a tumor of indefinite outline forms, having a resistant feel; and a vaginal or rectal examination may reach the swelling from below.

Fæcal impaction or malignant disease cause hard, rough, slightly movable tumors, the former sometimes pitting on pressure.

The *hypogastric region* contains a part of the small intestine, the bladder when distended, the uterus when enlarged, the ovaries if growths occur in them, and the Fallopian tubes when a fœtus or fluid greatly distends them.

A distended bladder rises above the pubes as a globular, fluctuating tumor, thin walled, tense, and slightly movable.

A central ovarian tumor may at times appear in this fashion, but on passing the catheter the case will be decided.

One must be sure that the catheter *enters* the bladder.

Uterine enlargements are central, soft, or solid, continuous with the cervix on a bimanual examination. Ovarian tumors are seldom, if ever, in the median line, and a bimanual examination shows them disconnected with the uterus. The same can be said of Fallopian tumors, save that there is a connection between them and one side of the uterus.

The *left iliac region* contains the sigmoid flexure of the colon, part of the descending colon, and some coils of small intestine. The flexure may be the subject of fæcal and cancerous tumors and fibroid thickenings. Intussusception shows itself as an elongated, sausage-shaped tumor, tender on pressure, and usually on the left side.

This ends, properly speaking, the discussion of tumors located distinctly in one of these nine regions; and there now remain to be considered those cases where the whole cavity is nearly or completely filled with a cystic or a solid growth. Cystic tumors are usually renal or ovarian, but the natural uterine enlargement, hydramnios, and encysted ascitic fluid must always be kept in mind as possible occurrences. Cysts in the upper part of the abdomen raise the chest wall and move down on a deep inspiration. In all large fluid collections in the abdomen fluctuation occurs; and impulse given by the hand on one side of the abdomen is transmitted to the hand placed on the other side.

A tumor in the upper part of the abdomen gives a dull note above the growth, for there is no intestine between the wall and the tumor.

Renal cysts bulge more in one line than the other, and the

colon runs down on the inner side of the swelling. Deep inspiration makes the percussion note tympanitic over such a tumor, where formerly it has been dull.

In tumors with no pelvic connection a clear note runs across the abdomen below the cyst; when the growth springs from the pelvis the reverse is the case.

Ascitic fluid is differentiated from a cyst by the great difficulty in respiration in comparison to the size of the swelling and by the percussion note.

Solid tumors of the abdomen do not differ, except in their feeling of consistence, from cystic growths. Their position may be the same, they may grow to as great a size, and they may resemble a cystic tumor except in the absence of fluctuation.

Whenever an abdominal tumor could possibly be a pregnancy, auscultation must be most carefully made. Even in very large cystic tumors this may be necessary, from the possibility of an abnormally large amount of amniotic fluid, or from the presence of a cystic growth in addition to the pregnancy.

Very rarely the abdomen may be distended by a mass of fæcal matter, the collection being generally distributed over the whole abdomen. This condition may present the appearance of a distinct abdominal tumor, and it is diagnosticated either by the pitting of the mass on pressure or by careful percussion, when it will be found that the note, if not absolutely tympanitic in the center of the abdomen, is decidedly less dull. Rectal examination may give no information, as the bowel may be either loaded or empty. A knowledge of how to examine the abdomen and pelvis is equally necessary to the physician and surgeon, in order that the diagnosis of medical and surgical diseases may be made and differentiated. Instrumental examinations belong to the province of the surgeon, and will not be discussed in this work.

CHAPTER XV.

DERANGEMENTS OF MENSTRUATION DUE TO CERTAIN AFFECTIONS OF THE NUTRITIVE SYSTEM.

THE sexual functions are liable to derangement in all acute and chronic diseases of the general system. The essential fevers and inflammatory affections, such as pneumonia, very frequently give rise to amenorrhœa either during the acute stage of the disease or in the period of convalescence. It is not an uncommon occurrence for menstruation to be delayed in case the menstrual period arrives in the early stages of the acute diseases; but in those cases where the menstrual function is normally performed during the acute stages the menstruation may be delayed during the period of convalescence. In exceptional cases menorrhagia occurs. I have not infrequently seen menorrhagia in eruptive diseases occurring in adults. In one case of the malignant type of measles in a young girl who had only menstruated two or three times before the eruptive disease, menstruation came on about the fourth day after the appearance of the eruption and was exceedingly profuse. The disease was of the hæmorrhagic type and the menstrual flow was extraordinary, no doubt due to the hæmorrhagic condition. The case ended fatally. I have seen menorrhagia in remittent, and occasionally in intermittent, fever which was no doubt caused by the malarial poison, as it entirely disappeared after recovery.

Causation.—Amenorrhœa in acute diseases, either in the early stages or during convalescence, is undoubtedly due to malnutrition. Menorrhagia is in certain cases due to the deteriorated condition of the blood which establishes a hæmor-

rhagic condition. In the malarial fevers I believe menorrhagia is produced by the general hyperæmia of the abdominal and pelvic viscera and the obstructed return circulation caused by the enlargement of the liver and spleen.

Treatment.—In the management of those cases the whole attention should be given to the constitutional disease. The indications clearly are to restore the conditions of the general system which are necessary to normal menstruation, and when these are restored—in other words, after recovery—the amenorrhœa will be entirely corrected without the aid of any special treatment directed to the pelvic organs. The same indications are present in cases of menorrhagia due to the diseases already referred to. Whatever gives relief to the constitutional disturbance will accomplish all that is requisite. In case the menorrhagia should in itself become a serious condition, efforts should be made to arrest it. For this purpose I have found aromatic sulphuric acid, combined with digitalis in case the heart is acting feebly, to answer excellently. Should the stomach not tolerate these remedies, the fluid extract of hydrastis canadensis in full doses should be given *per rectum.* If these should fail, they may be reenforced by warm, astringent, vaginal douches. I have found one quart of warm water with half an ounce of vinegar most efficient. In obstinate cases the vaginal tampon may be resorted to.

DERANGEMENT OF THE MENSTRUAL FUNCTION FROM CHRONIC MALNUTRITION.

There are certain diathetic conditions which frequently impair the menstrual function. Chief among these are scrofula, tuberculosis, and—closely allied to these in its effects—syphilis. Next in order come toxic conditions like lead and tobacco poisoning, malaria, and foul air. Scrofulous women, who not infrequently are phlegmatic in temperament (the *apathiques*) and inclined to obesity, are often anæmic, and suffer from amenorrhœa or scanty menstruation. Another combination, as it may be termed, of morbid conditions is

seen in the scrofulous and chlorotic women. They are especially prone to amenorrhœa or scanty and imperfect menstruation. They usually menstruate rather sparingly in their best condition, and when, from any intercurrent causes, they become more anæmic than usual, menstruation is after a time likely to be suppressed, or to become so exceedingly scanty that it is hardly worthy of the name. In regard to tuberculosis, it is well understood, of course, that amenorrhœa occurs in the advanced stages of pulmonary tuberculosis, for example, but it frequently happens that in what used to be called the pretubercular stage amenorrhœa occurs in those of the tubercular tendency or diathesis. Exceptional cases are seen where the sexual organs are well developed and functionally active in those of this diathesis, and in whom there is menorrhagia. In syphilis, in the secondary stage, when there is marked anæmia with impaired assimilation and disintegration, menstruation is often entirely suppressed, or is scanty and of short duration. On the other hand, cases are not infrequently seen in which there is menorrhagia; but I am satisfied that here there are syphilitic lesions of the endometrium which account for the profuse menstruation, and that it is not wholly due to the general malnutrition.

In regard to cases of toxæmia, the influence on the menstrual function appears to be due to anæmia, produced by these toxic agents rather than by any direct influence of the materies morbi on the sexual system.

Causation.—In all of the affections named, the derangement of menstruation is evidently due to the imperfect quantity or quality of blood supply, the menstrual flow being suppressed or curtailed by the meager quantity or imperfect quality of the blood.

The treatment of such cases should be directed to overcoming as far as possible the constitutional affections. The treatment of scrofulous and tuberculous subjects suffering from amenorrhœa does not entirely come within the scope of the present work; but I may say that I have succeeded in overcoming the anæmia and in improving assimilation and

disintegration in scrofulous and syphilitic subjects by the prolonged use of small doses of bichloride of mercury with bichloride of iron, giving due attention to any derangements of the digestive organs which from time to time may appear. While all will grant that the mercury and iron are indicated in syphilitic subjects, some may doubt their efficacy in tuberculous affections, but I am satisfied that I have seen as good results in those of the strumous or scrofulous diathesis. To some extent this applies to the tubercular cases; but in many of those, especially such as are of spare habit, I have found that the use of wine, cream, and cod-liver oil, with small doses of iodine, answers better. In order to obtain the iodine and wine in acceptable form, I have of late years been using the Vin Nourry Iodotane (J. Nourry, of Havre, France).

In the second class of cases described, due to some toxæmia, I may mention, first, chronic malarial poisoning, which is so prevalent in this country. After the periodic fever has been relieved and there yet remains some enlargement of the liver and spleen, with more or less hyperæmia of the pelvic and abdominal viscera, and anæmia, I find that a similar course of treatment is indicated whether the patient suffers from amenorrhœa or from menorrhagia. It is necessary during the menstrual period to keep the patient quiet in the recumbent position and to employ aromatic sulphuric acid and hydrastis canadensis to limit the flow in the menorrhagic cases. In the intermenstrual periods I find that occasional doses of calomel correct gastric hyperæmia or impaired secretion, at the same time giving some saline or mineral water to keep the bowels regular, with iron and arsenic in small doses administered for a long period of time. The chloride of iron and chloride of arsenic, well diluted, can be combined and given after meals with marked effect. My habit is to keep the patient on this preparation for one week, and to give, the week following, about five drops of the tincture of iodine in a solution of sirup and water, with two or three drops of Fowler's solution, after each meal. This, with pure out-of-door air, good food, and a requisite amount of rest conjoined with

a reasonable amount of exercise, will soon establish the menstrual function in its normal condition.

With regard to lead poisoning, I have seen only a few cases among girls who worked in lead, such as type founders and typesetters. The ordinary treatment is here indicated; but after the evidences of the lead poisoning have disappeared, the patient generally requires a course of chalybeate tonics in order to restore the deranged menstrual function. Among a few hospital patients—sewing girls who spent their days in overheated, ill-ventilated, crowded rooms—I have only found it necessary to get them into the open air, to keep the bowels regular, to get the skin acting through the agency of bathing and friction, and then to resort to general tonic treatment.

In nicotine poisoning there is amenorrhœa invariably. I have seen a number of cases in hospital practice among girls who worked in tobacco factories. Change from their occupation, or removing the cause and building up by restoratives is sufficient and effectual treatment.

DERANGEMENTS OF MENSTRUATION CAUSED BY IMPAIRED DIGESTION, ASSIMILATION, AND IMPERFECT ELIMINATION.

Amenorrhœa, or scanty menstruation, is so often seen among those who are suffering from derangement of the digestive organs and consequent malnutrition, that I have arranged the subjects of it in two classes—namely, those suffering from some gastric derangement which impairs the appetite and is usually attended by slow and laborious digestion and constipation, and those suffering from impaired or sluggish disintegration and elimination, a condition which has been, I think, appropriately called excrementitious plethora or faulty elimination. I believe this to be akin to what is now called lithæmia. Of the first class it is understood that there is no organic disease of the stomach, such as gastric ulcer or some of the more important degenerative diseases, but a temporary impairment of the function of the organ from overwork—mental, physical, or both—or lack of sufficient mental or physical exercise to maintain health. On

the other hand, poor food supply, in quantity or quality, is frequently the cause of the gastric derangement and loss of appetite. Strange as it may appear, it is nevertheless true, that the very poor suffer from bad food supply—insufficient in quantity, poor in quality, and ill prepared; while, on the other hand, those who are abundantly able to live well ruin their digestion by overindulgence in improper articles of food, especially highly seasoned dishes, and sugar in all the tempting forms in which it is offered at the present time. With the class where the appetite is good or fair, the food supply sufficient, and the quantity of food taken generally superabundant and hence ill digested, and where the habits of life are sedentary either from choice or necessity, elimination is very imperfect. The history of the first class may be briefly given as that of patients suffering from impaired strength, who are easily exhausted. The pulse, color of the skin, and mucous membrane show more or less anæmia; the tongue is coated; the bowels are constipated; the appetite is poor; there is general drowsiness after eating, and often distress in the gastric region; the skin is dry; and there is lack of mental energy, or, in case there is any considerable mental activity, the mind is easily fatigued, and mental depression is liable to follow. Menstruation is usually scanty and of short duration, and in long-continued cases there may be entire suppression.

The diagnosis is made by the exclusion of all organic, renal, or hepatic disease after careful examination.

Most of the causes have been mentioned already. They are improper food, overtaxation, confinement indoors, or the opposite of this, overindulgence in too rich food, and a lack of wholesome and necessary mental and physical occupation.

In the treatment the first object is to improve the general secretions of the alimentary canal. This, I find, can be done best by small doses of calomel well diluted, given every hour for a day and followed by a saline laxative or cathartic on the following morning; then to keep the bowels regular, a pill composed of quinine, belladonna, and compound extract

of colocynth. To stimulate the appetite I prefer to give very small doses of the bitter tonics—half a drachm of tincture of columbo or of gentian well diluted, or a larger dose of the infusion of either. When this fails to give the desired result, I resort to three or four drops of nux vomica with two drops of wine of ipecac in half a wineglassful of water. The food should be plain and tempting. I am in the habit of allowing the patients to choose their own food, knowing that if it is agreeable they will take more of it and digest it better. Should they choose some unwholesome or absurd article, which selection I know comes from a perverted appetite, I forbid it. In order to aid digestion I give a teaspoonful each of Forbes's diastase and Fairchild's essence of pepsin with a little aromatic or peppermint water or a very small quantity of cardamom. Out-of-door air, exercise, the more agreeable the better, sufficient bathing to keep the skin active—lukewarm sponge bathing with friction answering in most cases—are all demanded. Those who are used to cold bathing I advise to continue it. Warm bathing I have seldom found suitable in such cases. The patient is kept on this line of treatment until the appetite and digestion are good and evidences of better assimilation are seen. Then I resort to chalybeate tonics, preferring the pyrophosphate of iron, three or four grains after meals, or the tincture of chloride of iron. If there is evidence of any strumous or tubercular taint, I employ the sirup of the iodide of iron. When general nutrition is established on a normal basis, I find that the menstrual function is, as a rule, restored.

In the management of the second class of cases, in which the primary trouble is excrementitious plethora or lithæmia, I first endeavor to secure a normal elimination by getting the kidneys, liver, and bowels to act normally. I find here that mild chloride of mercury is the best of all diuretics. At the same time it generally improves the secretions along the alimentary canal, including the hepatic. I generally keep such a patient for a couple of days on small doses of calomel, say one tenth of a grain every hour during the day, and then

follow it with a saline cathartic unless the patient suffers from flatulence, when I prefer the fluid extract of cascara sagrada with tincture of belladonna. After this I endeavor to keep the bowels regular—that is, to secure a free evacuation daily by means of some of the mineral waters taken warm early in the morning, or, if they are not suitable, a sufficient quantity of the cascara at night. The kidneys must be made to act by having the patient drink freely of distilled water or a spring water known to be as near purity as possible, added to which is enough bitartrate of potash to give it an agreeable, acidulous taste. If the patient is restless and given to dreaming, with pain in the back of the neck, queer feelings about the head, and wandering pains here and there in the body, I give a dose of bromide, usually twenty grains in the afternoon and the same at bedtime. I ask her to take at first but very little exercise, substituting for it massage once a day and giving very little food, and that of the simplest kind—oatmeal, farina, or barley gruel, a few raw oysters, a little milk and toast, and a very small quantity of beef, mutton, or chicken, with occasionally an egg. Here, again, I would consult the wishes of the patient in case her inclination does not lead to the use of wholesome articles of diet. The great object should be to give only food enough to be thoroughly digested, and the less animal food the better. In fact, I have found that many of those cases get along without any animal food at all, although they had been in previous years great eaters of meat. I prefer to keep such patients just a little hungry all the time, and then I am confident that they will thoroughly digest and assimilate what they take, and, as I make no great demands upon their strength by muscular and mental activity, and see that elimination is carried on as perfectly as can be, I usually find that they begin to improve rapidly. Many such cases are inclined to be fleshy, and they generally begin to improve as soon as they show evidences of losing flesh. The first class that I mentioned are weak and depressed, the depression coming from lack of nourishment, their tissues being poorly nour-

ished. The latter class owe their oppression to the presence of effete material that must be eliminated.

MENSTRUAL DERANGEMENTS FROM DEFECTIVE INNERVATION.

One of the conditions of normal menstruation, and indeed for the natural performance of all the functions of the sexual organs, is proper innervation. It follows, as a matter of course, that noticeable disturbance of the function or malnutrition of the nervous system will derange the catamenia. Deranged menstruation (appearing as amenorrhœa, scanty menstruation, and occasionally menorrhagia) arising from deranged innervation is usually observed in one of two forms—the first appearing abruptly from some acute disturbance of the brain and nervous system, and the other, which may be called subacute, as a form of neurasthenia or malnutrition of the centers. In the first class menstruation is abruptly suppressed by some strong impression or shock, fear, surprise, great joy or sorrow. Those cases of suppressed menstruation which occur from a sea voyage or change of residence and the excitement of traveling also are classed under this head. The history is usually that a short time before the menstrual period some shock from fright, accident, or profound disturbance of the emotions, which necessarily continues for a time, has occurred, and menstruation fails to appear. Indeed, such cases are usually brought to the notice of the physician when menstruation does not come on at the proper time, when the patient is usually found in an excited, nervous condition. The menstrual molimen may be most marked, the patient complaining of backache, pelvic tenesmus, cerebral engorgement—as evidenced by flushed face, throbbing temporal arteries, and headache of the congested variety—and a pulse usually accelerated and tense. These are associated, as a rule, with derangement of the digestive organs. The function of the kidneys is often disturbed, the secretion of urine being sometimes excessive, at other times scant, and the bladder is irritable. In excep-

tional cases menstruation may appear before the proper time, and menorrhagia may occur.

Causation.—It has often been demonstrated experimentally that digestion is arrested by a strong, sudden mental impression, especially if the impression maintains a high state of mental tension for any length of time. It seems as if the nerve forces which controlled the function were, for the time being, inhibited. No doubt this is the case with regard to the function of the uterus. The nerve forces are interrupted in their influence upon the function of menstruation. Menorrhagia, when it occurs in connection with this mental and nervous disturbance, is not so easily accounted for. It may be that the vaso-motor nerves are stimulated or shocked in some cases so that the vessels they control are contracted, while in others the shock may be severer, or the nerves weaker, the result being that complete control of the caliber is lost and then the vessels dilate beyond the normal. In those cases seen in my own practice that have had menorrhagia the acute mental disturbance came at the time when menstruation was due or had already begun, but why the flow is profuse is not quite clearly made out.

Treatment.—The beneficial effects of treatment depend to some extent upon the time at which the patient is seen. If taken under care immediately after the mental disturbance appears (whatever it may be), and she can be quieted and relieved, the response to remedies is often quite satisfactory and menstruation may come on in due time. If the trouble that has been set up has been prolonged, the treatment is not always so satisfactory. No matter what the disturbance has been, whether shock from fear or sorrow, the patient is generally found in a state of high mental excitement, and the great object is to produce rest and quiet. Unless the patient is a feeble subject, the bromides are of the greatest possible value, and they should be given in sufficient doses to produce sleep and that peculiar indifference which follows full doses of bromides. At the same time every effort should be made to quiet the cerebral circulation by stimulating food, bathing,

friction of the skin, or artificial heat to the extremities. When once the patient has been calmed and has obtained sleep, and any apprehensions that may have prevailed have subsided, then rest and protection from further disturbance should be enjoined, and the bromides repeated if there is a disposition to recurrence of the original symptoms. In cases of profound sorrow it is often necessary to combine with the bromides, or follow them by, diffusible stimulants like ammonia and camphor, avoiding opium, if possible, and yet opium may be given in case other remedies fail, but in small doses. If the mental perturbation persists, the patient's time should be occupied in the use of baths, massage, central galvanization, frequent meals of light food, and attention to the bowels, which are to be kept in a lax condition. Very much can be accomplished in such cases by a judicious, cheerful nurse, who can distract the patient's attention. When the time for the recurrence of menstruation arrives I have found that the diffusible stimulants like camphor with ammonia, and in some what feeble, depleted subjects, cannabis Indica and ammonia with chloric ether, help to bring on the flow. If that period passes, then attention to the general health should be continued until the next period, when the diffusible stimulants should be again employed ; and if these fail, the faradic current should be passed through the pelvis. In case the menstrual flow comes on, but attended, as it frequently is, with unusual pain and discomfort, moderate doses of bromide with antipyrine will often give decided relief. There are other remedies which may be required in this condition, but I shall reserve what I have to say about them for the chapter on Dysmenorrhœa.

DERANGEMENTS OF THE FUNCTIONS OF THE SEXUAL ORGANS, CHIEFLY MENSTRUATION, ARISING FROM NERVOUS EXHAUSTION OR NEURASTHENIA.

The subject for present consideration is certain states of the nervous system which are directly the cause of menstrual derangements. This nervous exhaustion or neurasthenia, and

its ultimate effects on the generative organs, is in strong contrast with the sudden or acute derangements of innervation which have just been discussed. This exhaustion of the nervous system is slowly developed, and its ultimate results appear late in the progress of the disease. It is most frequently seen among young women, but may occur at any time of life. It is known by a variety of names, such as nervous debility, nervous prostration, and nervous exhaustion; but I prefer the term neurasthenia, as first employed by Dr. George M. Beard, as it appears to me to be the most expressive and comprehensive. This condition of the nervous system is no doubt in many cases brought about by imperfect nutrition and in others by overtaxation of the nervous system. There are two forms seen in practice, in one of which there is probably anæmia of the brain and spinal cord, while in the other there is passive hyperæmia or congestion. I do not know that the difference in cerebral circulation accounts for the difference in the clinical history of the two classes, and even neurologists are not agreed upon this point. I am, however, satisfied that there are those who show symptoms of general neurasthenia associated with anæmia, and others who differ in the history and give symptoms which suggest a passive hyperæmia of the brain and nervous system generally. This theory—whether it is based upon fact or not—aids in understanding and treating such cases as come under observation, and hence I accept it.

DERANGEMENTS OF MENSTRUATION ARISING FROM MALNUTRITION OF THE NERVOUS SYSTEM.

Amenorrhœa, or scanty menstruation, is the most common deviation from the normal functional action of the uterus, but menorrhagia and dysmenorrhœa not infrequently occur from the same causes. Dysmenorrhœa and scanty menstruation occur together in certain cases. Amenorrhœa occurs in those who suffer from cerebral anæmia, and occasionally it is associated with unusual pain. Menorrhagia is far more likely to occur in cerebral congestion of the asthenic type, and here,

if the flow is normal, there is general dysmenorrhœa. Painful menstruation is of the neuralgic type and characterized by irregularity in the time of its occurrence in relation to the flow. Occasionally a period passes without pain or with very little, while the next may be attended with great suffering. Relief from pain in such patients often results from change of climate or agreeable occupation at the time of the flow. Leucorrhœa appears in the progress of the trouble, with backache and slight pelvic tenesmus, and occasionally pain during the menstrual period. This aggravates the whole, increasing the neurasthenia and also the dysmenorrhœa. If amenorrhœa continues, there is usually menstrual molimen, often aggravated in all its characteristics.

Absence of menstruation is no doubt itself very often a conservative event, especially if there be anæmia and general malnutrition; and the nervous affection may be to a certain extent relieved by the stoppage of this function. If, however, the amenorrhœa is long continued, the general health of the nervous system becomes still further impaired and is more resistant to treatment. In certain cases there is loss of the sexual appetence, while in others—especially those in whom there is cerebral and spinal congestion—there is perversion of this sexual function. Patients are subject to amorous dreams and cohabitation is at times unsatisfactory, but almost invariably natural or unnatural gratification is followed by increased nervous exhaustion. This is the history of the derangement of function which arises from neurasthenia as far as the sexual organs are concerned.

In regard to the question of neurasthenia itself, of which derangements of menstruation are established symptoms, I shall reserve what I have to say until I come to consider the nervous exhaustion when it is caused wholly or in part by diseases and derangements of the sexual organs.

Causation.—That this amenorrhœa, dysmenorrhœa, or menorrhagia is caused by a neurasthenia is evident, first, from the fact that normal innervation is an important essential to the performance of any bodily function, and,

secondly, that there is, as a rule, some derangement of menstruation whenever there is any marked disease or derangement of the nervous system, such as nervous exhaustion. Furthermore, in cases of deranged menstruation associated with nervous exhaustion normal menstruation is usually established as soon as the affections of the nervous system are removed.

Treatment.—It is evident that the treatment of menstrual derangements due to neurasthenia must be directed to the latter affection, which stands in a causative relation to the derangement of function. I shall therefore confine my remarks for the present to the management of the patient during the menstrual period, and refer the reader, for the subject of neurasthenia and other affections of the nervous system, to the chapters on these subjects.

If menstruation is scanty it is judicious to encourage a freer flow, especially if this state of affairs has existed for a time. The same indications obtain when there is amenorrhœa with a marked menstrual molimen. If there are coexistent anæmia and general malnutrition, diffusible stimulants with rest will give a certain amount of relief. Aromatic spirits of ammonia and camphor water with cannabis Indica will often increase the flow, or aid in bringing it on if it has been entirely absent. In case there is pain with the molimen or the scanty flow, the addition of chloric ether often gives the most marked relief. Should there be cerebral congestion, as indicated by a full feeling in the head and diffused headache, with considerable vascular tension, backache, general irritability, and sleeplessness, bromide of sodium, with warm foot baths and cooling applications to the head, will increase the flow or, if it does not appear, bring it about, if it is possible to do so. This treatment will also relieve or modify the pain to a great extent. In case there is menorrhagia, digitalis with small doses of bromide of sodium will control the flow when the condition is attended by cerebral hyperæmia. In cases associated with anæmia, cannabis Indica with aromatic sulphuric acid best answers the purpose.

MENSTRUAL DERANGEMENTS FROM NERVOUS EXHAUSTION FOLLOWING PROLONGED LACTATION.

Lactation, if continued for a great length of time, or if complicated with general taxation from mental or physical labor, produces a form of nervous exhaustion which I think is peculiar to this function. Anæmia also appears in some cases in the early months of lactation, and general prostration shows itself in the usual way by rapid pulse, shortness of breathing on exercise, flushings of the face, and general lassitude. The symptoms are usually sufficiently marked to drive the patient to seek relief; and on improving nutrition and giving restorative tonics, and having the patient abandon all other duties of the household and elsewhere, the exhaustion can soon be overcome. In some cases where the digestive organs do not act vigorously and do not respond to the usual remedies for enfeebled digestion, it becomes necessary to wean the child. The fact is, that those cases either recover after restorative treatment, or are obliged to give up nursing, and this is sometimes decided before the peculiar nervous exhaustion characteristic of lactation is produced. Of course, this nervous exhaustion may be, and occasionally is, associated with anæmia, but I have very often seen it in a marked degree where nutrition seemed to be fairly good; there was no marked anæmia, nor was there any extreme muscular debility—only an exhausted, debilitated condition of the nervous system, characterized by dizziness, temporary loss of memory, and a strange feeling in the head, which rendered the patient apprehensive that her mind was becoming impaired.

These patients have also attacks of mental depression, and are at times emotional without being able to give any good reason for this mental disturbance. Timidity becomes sometimes oppressive; and often they are haunted by a fear that something is going to happen to them, or that they are going to be dangerously ill or become insane. Frequently they have intercostal neuralgia on the left side,

which at once leads them to the conclusion that they must have some serious heart trouble. This is especially so if they have attacks of palpitation upon being startled or when taking active exercise. Sometimes they are sleepless during the night, but often feel drowsy and heavy during the day, especially after eating. This trouble of the nervous system usually comes on after nursing for a year or more, and, as a rule, without menstruating. Menstruation generally returns about the eighth or tenth month, although lactation may be continued; but in those cases of exhaustion menstruation seldom recurs, and when it does it seems to increase the nervous disturbance. Quite frequently in place of menstruation a continuous leucorrhœal discharge comes on.

Causation.—Without dwelling upon the anæmia occurring in the early months of lactation, and which is due to ordinary causes or an excessive demand upon the nutritive system, I shall simply consider causes which produce this nervous exhaustion which is not infrequently seen uncomplicated with general malnutrition and marked anæmia. It is evident to my mind that the malnutrition in some of those cases is confined largely, if not entirely, to the nerve centers, and that this is probably brought about chiefly because human milk takes from the mother a large amount of nerve nutriment; but this may hardly be sufficient to account for the malnutrition of the nerve centers in those who have abundant food supply with good appetite and digestion. The trouble is largely aggravated by the mental labor and worry imposed upon mothers in taking care of their household and children, or, if they have means to free themselves from these responsibilities and duties, they are mentally taxed by the demands of society and exercises of an intellectual character. More than this, they are of necessity much disturbed at night and their sleep greatly broken. This, of course, obtains to the greatest extent in the early months of lactation, but its effect is shown later; and when the time comes that the child permits the mother to sleep

she has, owing to her nervous debility, become almost incapable of securing it, which aggravates her trouble. This seems to me to be about the way in which this peculiar condition is brought about.

In regard to the treatment, weaning the child is the most important indication, and the trouble usually comes about the time when that should be attended to. In this condition, as indeed in all, I believe that gradual weaning is by far the safest and most salutary for both mother and child, and I especially insist upon this, because patients, when made aware of the fact that their ailment is due to nursing, are generally anxious to abruptly give it up. This I believe to be unwise and unsafe. I therefore advise gradual weaning, and then endeavor, by an abundant supply of good, nourishing food, by stimulating the appetite by tonics if need be, aiding digestion if that is necessary, and by the use of restoratives, to effect a return to the normal. When the nervous disturbances—despondency, apprehensions, excitability, and sleeplessness—are such as to be at all alarming, I have found that, as soon as the child has been weaned, very small doses of opium (by that I mean enough to give a sustaining, not an anodyne effect) to be remarkably serviceable. After the use of the opium, or during its administration, I have been in the habit of giving what has by some been called brain food, and by that I mean the fats and all articles that are rich in phosphates, and then adding in the way of medicines some of the preparations of phosphates. In the early days of my practice I was taught to use the pyrophosphate of iron, and I still find it efficient. I also use the old Parrish's compound sirup of phosphate with advantage, giving these remedies after meals. Strychnia, at the beginning of the treatment, sometimes gives a good deal of relief, but usually requires to be given in good-sized doses—from one thirtieth to one fortieth of a grain three times a day. Regarding alcohol in these cases, its use or not must be settled according to the nature of the case. I have found that many of those who suffer the most have used beer and wine, sometimes spirits,

during lactation, hoping that it would enable them to maintain their strength. In such cases I find that it is well to withhold it, for, if they lose their nerve force or strength while using alcohol, it usually fails to restore them when the drain or the taxation of nursing has ceased. With those who have been in the habit of using stimulants it is well to try a little wine with meals; or if the patient is spare of habit—a *sensitif* with not a very good appetite—a good ale will sometimes aid digestion, and have a sustaining and sedative effect. But all stimulants should simply be tried and their effect watched. It is impossible to tell whether they will do good or harm until after the trial. Mental rest with sufficient out-of-door air and exercise should be prescribed. In obstinate cases absolute rest with massage, central galvanization, and the restorative remedies already referred to, should be resorted to.

CHAPTER XVI.

DERANGEMENTS OF THE SEXUAL FUNCTION.

PREMATURE excitation of the sexual function is occasionally seen at a very early age. I have seen cases in practice, and know that there are many others recorded, of masturbation in children of from two years and upward. This, I believe, is rare at so early an age, and yet they are seen perhaps as often among quite young children as at any other time, excepting just about the time of puberty. When this perversion of the sexual function occurs in very early life it is more easily detected, because the patient, as a rule, has not intelligence enough to conceal her unnatural behavior. I have known mothers to observe this curious behavior on the part of their children, and, as sooner or later it is attended with ill health, they seek counsel and describe those actions on the part of the patient, sometimes knowing, at other times not knowing what it really means. The children who suffer from this affection usually become debilitated, anæmic, have indigestion, a fretful temper, are inactive and lack interest in things about them, and are morbid and gloomy. They suffer also from headache and prefer to be alone—if not all the time, yet at times. When a history of this kind is given which does not include an account of the practicing of this bad habit, the suspicions of the physician can be confirmed by asking the mother or attendant to watch and see whether the patient is disposed to handle the genitals or to cause excitation by friction against the corner of a chair or the table, or by sitting and moving to and fro on a chair. This is sufficient to confirm the diag-

nosis, especially if, after this performance is over, the child is found in an excited state and bathed in perspiration.

Causation.—From observations of the cases that I have seen, I am inclined to believe that there is considerable heredity underlying this affection, at least as a predisposing cause. The more direct causes are, no doubt, irritation about the vulva from lack of cleanliness, or a vulvitis caused by exposure to cold. Ascarides, hæmorrhoids, rectal fissure, eczema about the anus, or erythema are said to be frequent causes. I know also that adhesions of the prepuce to the glans clitoridis, by which the secretions are imprisoned, is a cause of irritation. I am inclined to think that this plays a far more important part in producing this affection than is generally believed among practitioners. I have no doubt that this habit is quite frequently learned from depraved associates, and especially is this true among the older girls. I have recently seen a patient who found that a certain gymnastic exercise produced this morbid gratification.

Treatment.—When the diagnosis has been made with a reasonable degree of certainty, the cause should be sought for and, when discovered, removed. If the patient is suspected of suffering from ascarides, relief will be promptly obtained by using for a few days salt-water injections after each time that the bowels move, and then every second or third day afterward. Meanwhile the state of the bowels and digestive organs generally should be corrected in case they are out of order, as they usually are. Hæmorrhoids or fissure should be treated at once by surgical means. If any eruptive disease be found, it should be relieved in the usual way. Should a subacute inflammation exist about the vulva, that will require treatment by keeping the parts thoroughly clean, and, after bathing, dusting the parts over with subgallate of bismuth, which I find to be one of the best applications. This is a recently introduced remedy, but has acted remarkably well in my hands. Formerly I employed a mild solution of nitrate of silver, one grain to the ounce, thoroughly applied with an atomizer every second or third day,

and in the meantime the parts were dusted over with bismuth and chalk. In case there is any adhesion of the prepuce, it should be separated and the parts that were adherent dusted over with powder of subgallate of bismuth or iodoform, preferably the former. When all evidences of local irritation have been removed and the patient's general health is restored, there is often a marked diminution in disposition on the part of the little one to practice this abuse, but, as a rule, it does not by any means cure the patient. Absolute and continuous watchfulness on the part of the mother or attendant is the only way to eradicate the tendency. This must not be for a week or a month, but, if necessary, for years. Such a patient should never be left alone night or day. She should be attended while out of doors and at play. Of course, in school she will be under the observation of her classmates and teacher, which will be a restraining power, but at all other times an attendant must watch her; especially she should never be allowed to go to the bath room or closet without having the door of the room open so that the attendant can observe her.

In one of the worst cases of the kind that I have ever seen the patient was greatly improved when summer came, after a winter's treatment and observation, and she was taken to the country, where, under the change and with new attractions, out-of-door air, and constant watching, she completely recovered. On returning home, however, she was inclined to resume the habit, probably because of association, so that exceedingly great care was necessary during the season. I believe that she entirely recovered, but became somewhat immoral in her doings after attaining her majority; at least that is the report I received from her physician.

While watching and restraining those patients, as one would care for an insane person, I must suggest that corporal punishment should be avoided, especially the old-fashioned, but I hope now obsolete, method of spanking. Many observers in the profession have declared that this punishment often produces irritation of the genitals, and I

believe it to be true. A cultivated, intelligent mother, attendant, or teacher can accomplish a great deal by suggestion—that is, by drawing the attention of the little one to matters of interest outside of herself and her emotions; and much also can be done in the way of cultivating the will and self-respect.

EXCESS IN THE NATURAL OR UNNATURAL EXERCISE OF THE SEXUAL FUNCTION.

While it is well understood that the excess of the sexual function after puberty, especially after majority, is attended with the same baneful effects as the normal excess of any other function, it has been also claimed by some medical men who have given attention to this subject that the unnatural exercise of the natural function, if not carried to excess, is not attended with such marked damaging effects on the general health as would be supposed. I, however, take the ground that perverted sexual function certainly is more injurious, and is far more likely to be carried to excess, than the normal exercise of the function. In either case, however, the effect is to produce nervous and general exhaustion. Such cases are often characterized by a vigorous, even morbid appetite, and very often by a reasonably good digestion; but assimilation is not sufficient to maintain the balance of a wholesome nutrition; hence the patients become anæmic, often spare of habit, and are physically incompetent, as shown by the fact that they are most easily fatigued and exhausted. While this is true of the muscular and circulatory systems, it is perhaps more marked in regard to the nervous system. Neurasthenia or nervous exhaustion of a peculiar form is observed. There is a marked inability to do brain work, and concentration of the mind is exceedingly difficult; or, if the patient can control the mind and secure application of it to a subject, exhaustion and weariness soon supervene, and are very often followed by headache. Mental inertia is then a prominent symptom, and if an effort is made to exercise the mind it often results in producing great irritability

or an irascible temper. At first sleep is usually good; in time it is apt to become imperfect. If such patients are at all excited on retiring to rest, sleep does not come; or if they get to sleep readily and sleep well, they will occasionally have wakeful nights.

It will be seen that the symptoms described in neurasthenia and general debility are unaccounted for by any other cause. This general exhaustion differs in no way from the same general affection from other causes except in one thing. In young people I have noticed that their strength fluctuates; that they will for a time manifest great exhaustion, and in a few days they will begin to pick up strength, both mentally and physically, and appear to be almost well, and then all at once they drop down again. Presumably this variation depends upon the excess which gives rise to it. Continence for a short time will enable the patient to regain strength, while a recurrence of the indulgence will promptly produce marked debility.

This affection is usually seen among young people, and the diagnosis is not easily made. It is exceedingly difficult to make a positive diagnosis, because it is not always prudent to make inquiries concerning this special function, and for this reason: if inquiry is made and the patient is not suffering from this excess, no information will be obtained, because the patient will not understand the question. If they are, they will, as a rule, pretend that they do not understand the question, or deny the fact even if they do understand it. One is then very often left in some doubt; but if the patient is young and unmarried, the mother or guardian may be advised to see that she behaves herself, and in the case of young married women information can be obtained from the associates in the family. The causes are in the great majority of cases due to ignorance. The sexual instinct craves attention, and the patient is unwitting of the consequences of overindulgence or abnormal gratification, and hence suffers. In some the cause no doubt arises from a precocious or overstimulated emotional nature. In others local diseases of the

sexual organs, and rectal diseases such as were mentioned in speaking of the same affection among children, are the causes, but I think that those local diseases are exceedingly rare as causes of these bad habits. On the other hand, I believe that the perversion of this function very often leads to disease of the sexual organs.

Treatment.—The treatment of this class of cases may be briefly given. In the first place, to stop the indulgence in those that are single, and to modify it in the other class—that is, to reduce the indulgence to the capacity of the patient to endure it. Then the treatment to restore the general health must be conducted on general principles. To enable those to accomplish the desired object it is sometimes necessary to give bromide in order to control the sexual excitation. This should be given in the afternoon and evening, so as to secure perfect rest at night, and the day should be devoted to the use of tonics and good nourishment, and, above all, wholesome mental and physical occupation carried as far as can be without fatiguing or wearying the patient. If they are unable to endure mental and physical exercise for any length of time, short stages of rest and equally short stages of exercise should be enjoined, so as to enable the patient to do all she is capable of doing without adding thereby to her general exhaustion.

MORBID SEXUAL APPETENCE.

That there are a few women who are morbidly amorous I believe; but they are exceedingly few compared with those who are almost destitute of this sexual appetence. Cases that are tormented by strong desires which they do not indulge are apt to be obtrusive in society, and to be considered by their neighbors as rather loud in habit and manner. They are often subject to attacks of a certain form of hysteria, which shows itself for a time in the way of explosions of hysterical attacks which pass off and the patient appear to be tolerably well, the attacks being brought on by excitement in company or by active, agreeable, or taxing occupa-

tion. The cause of this condition I believe to be entirely a peculiarity of the mental and physical organization. The transmitted emotional, mental organization is usually, though not always, associated with robust physical health. It is true, of course, that this can be cultivated by unfavorable associations and by an education which appeals to the emotions at the expense of the culture of the will. Lack of occupation of a wholesome character has no doubt much to do with this. The old saying that "idle hands readily find mischief to do" applies with perhaps greater force to the sexual system and idle minds.

Treatment.—The most important factors in the treatment are wholesome occupation, avoidance of exciting and frivolous company, and cultivation of the will power. Bromides are to be given to quiet all mental disturbances, as far as this can be done without producing any of the ill effects of the remedy. The bowels should be kept free by the use of saline cathartics or laxatives given early in the morning. Cold sponge or shower baths in the morning and a warm sponge or plunge bath at night are very often followed by good results. I believe by attention to such cases much benefit can be derived and valuable women may be saved from going to destruction by a reasonable physical and mental education, with the judicious use of a few remedial agents such as have been mentioned.

CONTINENCE, OR SEXUAL STARVATION.

According to my observation, women who have attained their majority without having had the sexual instinct awakened either by evil associates, their own sex, by courtship, or by marriage, may go through life without having any disturbance whatever from the sexual organs. Those, however, who have been married and have early in life become widowed, have much suffering from this continence, which, if not relieved or overcome, often leads, no doubt, to ill health, to say nothing of immoralities. Those who are in good health are as likely to suffer as those that are more delicate,

the woman becoming restless, irritable, often sleepless, and subject to acute attacks of indigestion and to headache. In some cases if the conditions are maintained, endometritis and leucorrhœa are developed. Menstruation also may be deranged.

In regard to the causation, nothing need be said, except that the most distressing cases are found among unfortunate women who marry men who have been rendered incompetent by excess and bad habits. All the laws of Nature say that such women should be liberated, the state and church laws to the contrary.

Treatment.—The treatment of those cases demands, as in the former class, healthful occupation without excessive taxation. This is of prime importance. Here the bromides should be used as I suggested, and baths and saline laxatives also. In case there are general exhaustion and anæmia, which are sometimes observed in delicate women, or if these general conditions are produced by the morbid emotions, general tonic treatment is necessary. Perhaps one of the most important remedies in such cases is strychnine. In the morbid conditions which we have endeavored to briefly outline we find two classes associated with the various abnormal states of the sexual organs—the asthenic and the sthenic. The asthenic require tonic treatment, good nourishment, light exercise, agreeable occupation, and strychnine. The sthenic require bromides, mental and physical exercise and occupation that can be well borne, protection from morbid excitement, and the full benefit of hydropathy.

SEXUAL FRIGIDITY, OR SEXUAL ANÆSTHESIA.

Two classes of cases come under this heading: First, those who are without sexual desire; and, second, those having desire in a mild degree, but who receive no gratification.

The first class are either defective in their sexual organs, in which case—being incurable—they should not marry; or the sexual feeling may be dormant, and conjugal obligations

fulfilled simply as a duty. A strong affection for their partners may develop the feeling in some; and, again, it may remain latent.

Faulty education and association are often the cause. Some grow up without affection or the need of it, and acquire the habit—if married—without reciprocal sexual attentions. Other cases, under opposite conditions, acquire perverted sexual habits.

Sometimes—indeed, not infrequently—the vulva is tender, or the prepuce of the clitoris is adherent, in which case local treatment is indicated. Some cases are benefited by cannabis Indica and nux vomica, others are helped by alcohol. The great thing is to awaken desire by caressing demonstrations of affection.

The *second* class are more easily cured, provided the husband can be educated up to a necessary degree of self-control. In most of these cases the husband has availed himself of conjugal privileges until he has become altogether too expeditious, while the wife requires more time than is afforded; the cause in this—as in many other conditions—is a want of harmony between the parties united.

The most unfortunate are those who have the sexual appetence; they experience excitation, but receive no gratification. Such women, when married and subjected to repeated excitation without relief, become mentally depressed, and finally exhausted and melancholy. The treatment in such cases should be directed to the other member of the family. This brings up the subject of unsuitable unions, and certain conditions of both sexes which forbid or should contra-indicate marriage. The advice of the physician is seldom sought upon this important subject, but he should be prepared to advise wisely when called upon to do so.

The rule which I have followed in a general way is that all decided organic diseases of the sexual organs which may interfere with the exercise of these functions, especially if incurable, is a barrier to marriage. Functional diseases and the non-specific inflammatory affections do not stand in the

way of union. Regarding the habit of masturbation, while it unqualifies women to a limited extent, it is not a strong objection. Women given to this habit, while they may not be responsive to the opposite sex, do not suffer or cause suffering to any extent.

It is otherwise with men. Those who from bad habits have become incompetent, and can not be cured by proper treatment, should be prohibited from marrying. At any rate, the physician should point out to such that they are in danger of ruining the lives of others as well as their own happiness. They generally follow their own inclinations, but they generally meet their reward. This latter need not be regretted, were it not that the other sex suffer.

CHAPTER XVII.

ACUTE INFLAMMATORY AFFECTIONS OF THE PELVIC ORGANS.

THERE are two classes of inflammatory affections of the pelvic organs—the acute and the chronic. They differ so in their pathology and results, and in their influence upon the nutritive and nervous systems, that they require to be discussed as entirely different affections, although belonging to the same order. I shall first consider the acute inflammations.

Acute inflammation of the uterus, Fallopian tubes, ovaries, pelvic peritonæum, cellular tissues, and lymphatics are all distinct diseases, and are treated of separately in works on the subject.

I find, however, that all of these affections have very much in common in their pathology, clinical history, and treatment. Two or more of these affections often occur together; at all times it is difficult to make an accurate and differential diagnosis, and it is impossible in the most complicated cases. Under these circumstances the physician must deal with the pathological conditions as a whole, and manage them as one affection. The general therapeutics of one applies to all. The nervous system may be more profoundly impressed in ovaritis, for example, than in cellulitis, and the nutritive system, especially the digestive system, may suffer most in pelvic peritonitis; but the difference is in degree, not in kind. The acute pelvic inflammations are generally said to belong to surgery; but they come largely into the department of medicine.

Many of these affections in their advanced stages require

surgical treatment, but some of them can be carried through to recovery by medical treatment, and they all require medical care to a great extent.

Up to the present time the line which divides medicine and surgery in the treatment of pelvic inflammations has not been clearly pointed out; and yet it is often very important to draw that line clearly, in order to know when and how long to depend upon medical treatment, and when surgical aid is called for.

Ignoring the overcareful physician who depends upon his drugs to do impossible things, and the overenthusiastic surgeon who in every pelvic affection finds an indication for surgical interference, one may be able to lay hold of certain facts which will guide to wise decisions on this subject. My own opinion is that, so long as a case of pelvic inflammation is progressing so that there is no apparent danger to the life of the patient, and there are good prospects that recovery will come in time, medical care is most to be relied upon; but when suppuration takes place, no matter where, in the pelvis, then surgery comes in to do what medicine can not do. In cases that do badly, even when there is no certainty of the presence of pelvic abscess, but a possible general septicæmia, surgical treatment is called for. There are other cases that recover from the acute disease; but the products of the inflammation, in peritonitis for example, may be of such a nature that the pelvic organs are so damaged by adhesions, induration, or compression that they can not continue their functions, and the patient is rendered useless and suffers severely. Such cases may come within the reach of surgery when medicine is incapable of bringing relief. While the physician may succeed in the majority of such cases, he should be prepared to promptly discover those conditions which can only be handled by the surgeon. An equal responsibility rests with the surgeon in determining the limits of his calling in the treatment of such cases.

GENERAL PATHOLOGY OF ACUTE INFLAMMATION OF THE PELVIC ORGANS.

Acute inflammation is, in its essential elements, always the same. The process is modified in many important ways by the nature of the tissue and the cause which gives rise to it. For example, acute inflammation of the lymphatics, cellular tissue, Fallopian tubes, and ovaries is always likely to go on to suppuration and the formation of abscess. Pelvic peritonitis usually ends at the stage of exudation. There are, however, exceptions in all cases. The final results differ according to the parts affected and the causes.

Instead of giving here a full account of the pathology of inflammation of the special organs now under consideration, it will suffice for the present to mention some of the general characteristics of pelvic inflammation and the conditions produced thereby that come under the observation and care of the physician. This is the most useful knowledge for the medical practitioner.

Deranged innervation and congestion constitute the first steps in the inflammatory process. Next in order come the products or results of it—that is to say, the transudation and exudation of inflammation. In certain cases the process stops before the more highly organized products or exudates appear—I refer to cases that end in resolution. Others go on to suppuration. In others still the exudation goes on to the fullest possible extent and forms adhesions and indurations, and thereby damages the pelvic organs less or more. In all of these inflammations suppuration may or may not take place. The occurrence of suppuration marks the boundary line, as a general rule, between those that require medical treatment only and those that require both medical and surgical care. So long as there is no formation of pus in the pelvis, there is no urgent demand for surgical operations. An exception to this rule is met when the damage done by the products of inflammation—such as adhesions—affects the functions of the pelvic organs so that the life of the patient

is in danger, or renders her helpless and useless, and medical treatment fails to give relief.

The duration, termination, and after-consequences of pelvic peritonitis depend largely upon the extent of the inflammation and the cause which gives rise to it. In some cases, where the exudation is limited, recovery will take place in a few weeks, and but little after ill effects will be noticed, except occasional pain from time to time in the region of the exudate. In other cases, where the whole pelvic peritonæum is involved, the fimbriated extremities of the Fallopian tubes become involved in the exudate, and are virtually destroyed. If this includes both sides, the function of the ovaries and tubes is arrested because of the damage to the structure.

Degeneration of the ovaries often follows under these circumstances; sometimes they become inflamed and succulent; at other times they become atrophied—due, no doubt, to the pressure of the contracting exudate and the interruption of the circulation in them; in short, in some of these cases the adhesions and the quantity of exudation so destroy the anatomical relations that on post mortem it is almost impossible to recognize the tissues or organs. A mass of tangled adhesions and products of inflammation, covering the uterus and broad ligaments, is about all that can be made out.

When such patients live, they suffer greatly from pelvic pain and dysmenorrhœa, if the function of menstruation is not arrested, as it sometimes is, by the destruction of the ovaries.

In discussing the clinical history of these acute inflammations an effort will be made to point out the ways and means of detecting the most important states or stages of the process and their bearing upon treatment.

Symptomatology.—In all forms of acute inflammation of the pelvic organs there are symptomatic fever, pelvic pain, and derangement of the functions of the pelvic organs to some extent.

There is a great variation in the symptoms in different cases; the local lesions differ in degree and extent, so the

symptoms vary in their severity. There is a decided symptomatic fever, as indicated by the frequency of pulse and elevation of temperature. This may or may not be preceded by a chill or rigor, which is promptly followed by fever.

The temperature ranges from 101·5° F. to 104° F. There is also marked derangement of the digestive organs; sometimes there are nausea and vomiting, almost always tympanitic distention of the bowels, and usually constipation. There are derangement and depression of the nervous system, but rarely delirium. The patient usually complains of pain, the intensity of which varies considerably; it is usually most marked in peritonitis and ovaritis.

The disturbance of the function of the pelvic organs depends upon the organs involved.

If the attack comes on when the menstrual period is near, there may be menorrhagia. There is also quite often vesical and rectal tenesmus. There is tenderness on deep pressure in the iliac regions, and the pain is usually aggravated by any movement on the part of the patient. This usually compels the sufferer to rest quietly on the back, and some relief is obtained by drawing up the limbs. This position is most certainly assumed and persistently maintained in peritonitis. These symptoms, both general and local, usually continue without much modification, except that relief which may be obtained through the influence of medication, until the exudation is completed; then there is a lowering of the temperature and pulse, and relief from pain. The temperature, however, usually remains above 100° or 101·5° F. as a rule.

When suppuration begins, there is a renewal of the symptomatic fever; sometimes a chill precedes this recurrence of fever. On the other hand, if resolution takes place, the fever does not return to any very great extent. During the suppurative process, until the time when the pus is discharged, the temperature remains usually above 100° F., sometimes suddenly running up to 103° F., indicating that there may be an acute septicæmia. When the abscess opens and is com-

pletely emptied, there is usually a prompt and almost complete relief from the symptomatic fever.

In case the pus remains imprisoned or is only partially evacuated, and the suppuration and discharge continue to go on, there is usually marked constitutional disturbance, manifested by high temperature which varies abruptly in degree, at times running down almost to normal, and again going up to 104° F., or to 104·5° F.

In other words, there is general septicæmia with all its constitutional manifestations instead of symptomatic fever. This is really a secondary septic infection, and this and the evidence of suppuration are the data upon which one can decide that the medical management should end and the surgical begin.

There remains to be mentioned an exceptional form of pelvic inflammation which is preceded or accompanied by general septicæmia. In that condition the local inflammation is a part of a constitutional affection. There is in that condition septic fever as well as symptomatic. This is a dangerous condition from the outset, and when there is evidence that the source of infection, say in the uterus, tubes, or peritonæum, can be reached, the case should be at once transferred to the surgeon.

Physical Signs.—In the early stages the physical signs are few and of limited value. Tenderness and tympanitic distention of the lower portion of the abdomen are observed upon palpation, inspection, and percussion.

The location of the tenderness is evidence of the pelvic organ or tissue affected. General acute tenderness is present only in pelvic peritonitis, though in hysterical women it may be claimed that it exists. Tenderness on one side suggests that the inflammation is limited to that side. I am satisfied that a bimanual examination is not called for in the early stages of acute pelvic inflammation: first, because little can be discovered; and, secondly, such examination causes pain and aggravates the disease, and neither patient nor physician gains any advantage.

Causation.—There are certain states, no doubt, of the general organization and imperfections in the sexual organs which predispose to chronic inflammations, but I do not know that any such exist in relation to acute disease.

The causes are septic, specific, and traumatic. Lymphangitis and cellulitis are caused by sepsis following obstetric and surgical traumatisms. Metritis often comes from the same cause, but may as often come from septic and specific infection. Salpingitis, ovaritis, and pelvic peritonitis are, as a rule, secondary to metritis or lymphangitis of a septic or specific order.

Treatment.—The indications are to arrest or modify the inflammation, to relieve suffering, and correct the derangements of the nutritive and nervous systems that accompany or are caused by the local disease. The patient should first be placed in the most comfortable position possible. The back is preferred by most patients. Great relief is given in some cases by elevating the foot of the bed, thereby inclining the body toward the head. Woolen sheets and nightgowns are preferable. Heat should be applied to the extremities if they are cold.

The means employed to relieve pain, fortunately, have a beneficial effect upon the inflammation, and also sustain the nervous system.

Pain should be relieved and kept in abeyance by the regular administration of doses of opium sufficient to accomplish the object. When it is possible, opium or morphine should be given by the mouth, because in this way the patient can be kept more uniformly under its influence. It often happens, however, that the stomach is too irritable to retain anything. The morphine should then be given hypodermically until the stomach is quiet. In some cases where there is marked pelvic tenesmus the opium may be given by the rectum, in solution by enema, because if administered in suppositories it is too slowly absorbed.

Giving the opium in this way will, as a rule, relieve the pelvic tenesmus, which is often an exceedingly annoying

symptom. In many cases the patient has a constant desire to urinate, but all efforts to do so only increase greatly the suffering; this induces the patient to resist the desire, so that there is a vesical tenesmus with retention. Under these circumstances great relief can be given by the careful use of the catheter. Warm applications may be made to the abdomen in the form of fomentations. Counter irritation, also, is often useful, which may be obtained by the use of mustard paste, turpentine stupes, or capsicum plaster.

Sedatives, and warm applications. One of the best is absorbent cotton saturated with equal parts of tincture of belladonna and glycerin applied hot, and covered with rubber cloth. The old flax-meal poultice is objectionable, owing to its weight.

During the past five years a number of surgeons have given up the use of opium in the treatment of pelvic inflammation following abdominal operations, and that has led physicians to be timid and doubtful in the management of the affections now under consideration, but I am confident that the judicious use of this agent saves great suffering, and, by quieting irritation and sustaining the nervous system, favorably modifies the inflammatory process.

Ten or fifteen grains of quinine given on the first day of the inflammation is often of great value in lessening the fever and subduing the local disease. When the stomach is irritable it can be given in solution by the rectum.

The proper management of the digestive organs—stomach and intestines—is highly essential. The indications are twofold: first, to act upon the local disease through the alimentary canal, as, for example, in giving saline cathartics to eliminate septic material and stimulate the portal circulation; and, secondly, to aid nutrition and, by sustaining the patient, enable her to overcome the disease.

The stomach is always upset more or less. In some there are nausea, loss of appetite, and thirst, in others persistent vomiting and thirst, the latter condition occurring in extreme form when the peritonæum is involved. The thirst should

be relieved by small doses of pure or sterilized water. It should be given cold, but if that is not retained, sips of hot water should be given.

Ice allays thirst for a few minutes, and patients crave it very much, but it does harm and should not be given. If vomiting continues, all fluid by the mouth must be stopped ; and an enema of water may be given for the thirst as often as necessary. When flatus has passed freely from the bowels, showing that the intestinal tract is free, the quantity of fluid may be increased.

Many things have been used to quiet the stomach, but until the local irritation subsides and the bowels act there is not much relief. I have found, when hot water failed, that a cup of warm tea helped, and sometimes aërated waters in small doses. In some desperate cases I have given large draughts of water and had the patient throw it off—in other words, washed out the stomach in that way.

When the stomach is irritable and the patient is weak, whisky can be added to the water used in the enema, and after a time nutritive enemata, such as peptonized foods, or eggs and milk with brandy, should be employed.

No solid food should be given by the stomach until there is a desire for it and until the bowels have moved, or gas passed. Then the diet in acute disease, commended in the chapter on diet, should be employed. Very much harm is often done by trying to give food by the mouth when the stomach will not retain, digest, or absorb anything.

The management of the intestines must proceed simultaneously with the treatment.

In all acute inflammation of the pelvic organs the old way was to lock up the bowels ; the other extreme is the fashion of the present day, cathartics being used. The present theory is that all abdominal and pelvic inflammations are septic, and the morbid matter can be eliminated by the bowels. Saline cathartics are therefore used. The middle course is the correct one, I am sure.

When the lower intestine is loaded, enemata should be

employed to empty it. I prefer three ounces of sulphate of magnesia, and two ounces each of glycerin and water, to be repeated until the desired effect is produced. After this I use in solution small doses (half a drachm) of phosphate of soda every three or four hours if the stomach will retain it. When the enema does not give relief and there is flatulent distention (a very common and troublesome condition), attention should be directed to its relief. There are two causes which give rise to flatulence that can and should be differentiated clinically: one a local paralysis due to the presence of inflammation; the other caused by general paresis from shock of the sympathetic nervous system in general septicæmia. In the former there is peristaltic action of the upper part of the intestine and colicky pain, and in the latter there is complete inaction of the intestine and continuous pain.

In general paresis due to exhaustion of the sympathetic ganglia I use the following mixture of Keith: ℞ Magnes. sulph., ʒj; magnes. carb., gr. x; aq. menth. pip., ʒss.; aq. ad ʒij. Sig.: The dose to be repeated every two hours until the bowels move. If the stomach will not retain this, or if it does not act, I use another agent employed by the Keiths. Six grains of sulphate of quinine dissolved in two drachms of whisky in a couple of ounces of warm water are to be injected into the bowel, and repeated every two hours until three doses have been given, and set up peristaltic action.

In the first-described condition, in which there are frequent colicky pains showing the existence of peristaltic action and no appearance of the flatus passing downward, ten drops of liq. opii comp. and five drops of tincture of belladonna in a little hot water are instilled into the rectum, and repeated until the pain is relieved. After a rest of three or four hours, the quinine by the rectum should be given and repeated if need be.

The next object in the treatment is to favor a further limitation of the plastic exudation, and to promote the absorption of the inflammatory products; this can be accomplished, if at all, by the use of counter-irritation. When all acute

symptoms have subsided and there is no evidence of any serum or pus accumulated in the pelvis, the further disposition of the inflammatory products may be favored by the following treatment: Small blisters applied in the iliac region, and repeated, often give the patient relief from disturbance, and apparently favor the absorption of the inflammatory products. The best method of employing blisters under these circumstances is to apply two, one on each side, to be kept there until the skin is thoroughly vesicated, then puncture the vesicle and let out all the serum and allow the cuticle to fall down upon the cutis, and then apply over this absorbent cotton, and allow it to remain undisturbed until healing is complete, which usually takes place in from two to four days; blisters may again be applied in the same way. During this time the patient should be sustained by nourishment and tonics, quinine being one of the most reliable agents. The tincture of iodine may be applied through the speculum to the roof of the pelvis—that is, around the cervix uteri and upper part of the vagina—and iodide of iron may be given internally. Counter irritants from time to time should be continued. One part of croton oil dissolved in two parts of sulphuric ether, to which are added three parts of tincture of iodine, makes a good application for keeping up continuous irritation; this should be painted over the lower portion of the abdomen, and repeated when the fine eruption which it produces has disappeared.

These remedies should be changed after a time to the iodide of potassium or the bichloride of mercury with chloride of iron, the latter being the most valuable as a tonic and alterative. While there are still some of the products of inflammation remaining in the pelvis, or at least for a long time after the subsidence of the acute inflammatory symptoms, the greatest possible care should be taken to guard the patient against undue exercise; standing, walking, or riding may produce a relapse, and hence the patient should be made to carefully feel her way in sitting up and in taking exercise; especially should this care be insisted upon at the

menstrual periods. No rules can be laid down with reference to this, except that any exercise which excites pain should be avoided; short stages of exercise, followed by rest in the recumbent position, should be adhered to, a little more liberty being given every day, in case it does not produce pain. To promote absorption and loosen adhesions, massage, as practiced by Brandt and described in the part of this work on general therapeutics, may be tried.

CHAPTER XVIII.

CHRONIC INFLAMMATION OF THE PELVIC ORGANS.

Metritis.—Metritis occurs in a variety of forms, and on that account there are many classifications of this affection. Considering the subject from a medical standpoint, I am sure that the following arrangement will answer my present purpose:

Classified according to the duration and intensity or degree of inflammation, there are acute and chronic metritis; according to causation, catarrhal, septic, and specific; according to the tissues involved, cervical and corporeal endometritis and general metritis.

Acute metritis is rare except when caused by septic or specific infection.

General metritis, in which all the tissues of the uterus are involved, is seldom seen except in the puerperal state and in neoplasms of the uterus. The acute, septic, specific, and puerperal forms have been referred to in the preceding chapter on acute inflammatory affections of the pelvic organs.

The catarrhal, non-specific form of metritis—cervical and corporeal—is that which naturally comes in for the largest share of the physician's attention, and hence the present remarks will be limited to this part of the subject. It should be said, however, that the medical treatment of catarrhal metritis applies in other forms which require surgical treatment as well to a limited extent.

Chronic Endometritis.—One would naturally suppose that in endometritis the inflammatory process, when once begun at any part of the mucous membrane, would extend to the whole endometrium, but such is not the case. Clinical observations

show that cervical endometritis frequently occurs without corporeal. They occur together also, but cervical endometritis is most frequently found. This law in the pathology of uterine disease, which appears peculiar, is explained possibly by the fact that the mucous membrane in its anatomical structure, and more especially in its function, differs very widely in the body and cervix uteri. Certain it is that the pathology and symptomatology, as well as the physical signs, show that corporeal and cervical endometritis are two very distinct affections, demanding different consideration and treatment.

At the same time I must admit that they have many features in common, and that they also occasionally occur together, hence I shall give some general remarks which will apply to both.

There has been much discussion regarding the pathology of endometritis, both cervical and corporeal. Much of this difference of opinion arises, I think, from the use of the terms. Some claim that the only lesion in this affection is congestion; others hold that there is true inflammation, the difference apparently arising from the fact that one defines inflammation as one thing, while another believes it to be something else.

If endometritis, as it is usually seen in practice, is compared with the process of inflammation in other mucous membranes when it runs its entire course, then it will be found that endometritis is exceptional. It is known that in ordinary inflammation of the mucous membranes there is first congestion, then hypersecretion, then suppuration or purulent secretion, occasionally ulceration, and rarely—if ever—except in specific inflammation, an exudation of plastic lymph; then recovery follows.

The damage done to the membranes depends upon whether the process ends in suppuration, ulceration, or exudation. If this is taken as the typical result of inflammation of mucous membranes, then it is true that inflammation of the mucous membrane of the uterus is extremely rare; but the fact is

that the process of inflammation in mucous membranes may go on to congestion and hypersecretion and stay there. If these are long continued, certain changes in the mucous glands, epithelium, and cellular tissue take place; but suppuration or ulceration does not occur, as a rule, in endometritis.

The inflammatory process does not begin, run through all its stages, and then end; but it begins and progresses to a given stage, and is continuous instead of ending at a definite time.

Pathology.—In cervical endometritis, which is now usually called uterine catarrh, there is very decided congestion and hypersecretion of the glands of the cervix. This secretion differs very little in its physical properties from that which is normal, except that it is excessive in quantity. If this congestion is long continued, the exfoliation of epithelium progresses faster than its replacement by the development of new cells, so that the membrane is covered with young epithelium, which gives it a reddish color.

This disturbance of the balance between the process of exfoliation and reproduction not only involves the mucous membrane of the canal, but extends outward from the os externum about half the thickness of the walls of the cervix. This gives rise to the conditions which were described by the older writers as ulceration of the cervix uteri.

These are the principal anatomical changes found in this form of endometritis which come under the notice of the physician.

There are other changes which appear in septic, specific, and traumatic endometritis, which will now be given, as they are guides in determining the cause, and indicate that surgical treatment is necessary.

As the process advances, the mucous membrane becomes thickened by proliferation of the areolar tissue and by distention of the blood-vessels, so that it becomes too large for the surface which it covers; this throws it into the fine rugosities or wrinkles which give the surface a granular or

papillous appearance. These projecting points were supposed by the older pathologists to be an enlargement of the papillæ of the mucous membrane, but it is now known that they are new formations due to areolar hyperplasia. It is supposed also that the glands undergo some pathological change other than mere congestion, but probably the only change is a congestion and modification of the epithelium which lines them.

It is claimed by some that new glands are developed upon the outer surface of the cervix around the os externum. I am inclined to think, however, that the glands which are seen outside of the os externum in cervical endometritis appear there because of the thickening of the mucous membrane, which causes inversion or prolapsus of this membrane.

It is difficult to believe that the inflammatory process could lead to the development of new anatomical structures of a normal character, but there is strong evidence to show that this occurs in the mucous membrane of the cervix uteri.

Sometimes the irregularity of surface due to hyperplasia is very marked, especially in cases where there is laceration of the cervix. This condition has been called "granular degeneration"—a good enough name, if it is remembered that it is produced by a throwing up of the membrane into folds or projections by an enlargement and thickening due to hyperplasia, and that it is not a degeneration in fact.

In some cases, especially those that have been treated with caustics, the mouths of the Nabothian glands are closed, and the glands become distended by their secretion and form cystlike bodies deep in the membrane. These are usually seen at the surface as whitish, pearly-looking points, which contrast with the deep-red color of the mucous membrane around them. To the touch they feel like shot imbedded in the membrane. These have long been known as the "ovulæ Nabothii." More recently this condition has been called "cystic degeneration of the cervix." Sometimes one or more of them become very large, and by pressure

cause absorption of the middle wall of the uterus around them.

The hyperæmia sometimes extends to the middle coat of the cervix, and then for a time the tissues are softened and œdematous. With this condition there is usually free leucorrhœa and menorrhagia, especially when the body of the uterus is affected. Occasionally, though rarely, the menstrual flow is suspended or diminished. In some cases of long standing when there is laceration of the cervix, the areolar hyperplasia extends to all the tissues of the cervix, giving rise to that induration known as sclerosis.

The pathology of chronic corporeal endometritis is the same in the early stages as in cervical. In the more advanced stages the structural changes differ slightly. In the corporeal the most important change is hyperplasia of the epithelium and cellular tissue around the mouths of the utricular glands. This new formation is of a polypoid character, and has been designated by the terms endometritis polyposa or fungosities. In all other respects—such as deranged innervation, congestion, degeneration of the epithelium, and exfoliation and hypersecretion—the chronic corporeal and cervical inflammations are alike. The character of the discharge differs, but this will be noticed in speaking of the symptoms.

Symptomatology.—Cervical endometritis does not necessarily give rise to marked constitutional disturbance; when it does so, the symptoms usually appear in the form of general debility, especially of the nervous system. The patient may become easily fatigued and somewhat changed in disposition, and less inclined to mental activity. Sometimes there is considerable mental disturbance, but much of all this is usually due to the fact that the patient is annoyed by the presence of a more or less profuse leucorrhœa, which gives her discomfort and leads her to suppose that she is suffering from a serious affection. The constitutional effects of this local affection depend very much upon the sensitiveness of the patient.

The menstrual function is not necessarily affected. In cases of long standing there may be irregular menstruation, and the flow may be diminished, but this is not the rule.

The character of the leucorrhœal discharge is diagnostic. It is dense, thick, opaque, and tenacious, while the vaginal leucorrhœa is serous, non-tenacious, and sometimes slightly purulent. If the disease is long continued, backache comes on, the pain being located in the sacral region, which distinguishes it from the lumbar pain characteristic of general debility and some of the acute diseases. There is often some pelvic tenesmus. All these symptoms are usually very much aggravated by muscular exercise, and at each menstrual period. They are present in cervical and corporeal metritis, but in the corporeal form there are additional special symptoms which should be well observed. The digestive organs are more deranged—that is, there are far more reflex gastric derangements in corporeal metritis. The bowels are also more often constipated. The nervous system, especially the sympathetic, is more often depressed and exhausted. Most important of all, the menstrual function is affected to an extent never known where the cervix alone is involved. As a rule there is menorrhagia. The menses are profuse and prolonged, sometimes irregular; sometimes, and mostly in cases of long standing, there may be amenorrhœa or scanty menstruation. These points are symptomatic of corporeal endometritis, and the practitioner has to depend upon them in making a diagnosis.

These symptoms and the history generally are sufficient to guide the physician in instituting treatment, which, if not efficient after a fair trial, shows that surgical measures should be resorted to. At least a local examination is necessary in order to determine the exact nature of the case.

Causation.—The predisposing causes of endometritis are imperfections in the general organization and in the development and growth of the sexual organs, scrofulous and tubercular diatheses. The exciting causes of cervical endometritis are vaginitis and injuries of the cervix. Imperfect men-

strual involution and derangements of menstruation cause the corporeal variety.

Defects in the development and growth of the sexual organs are the chief predisposing causes of this variety of endometritis. General ill health is also a cause. Scrofulous and tubercular diatheses invite chronic inflammation of the mucous membranes generally, and the membrane of the uterus is no exception.

When the uterus is under size or malformed in a slight degree, so that menstruation is imperfectly performed, an inflammation of its mucous membrane is very likely to come on sooner or later. Sedentary habits and unsuitable clothing, overfatigue in standing or walking, or anything which interrupts the return circulation from the pelvis, predisposes to this affection. Using the sewing machine was the great *bête noir* of the gynecologist years ago. Now, I presume, bicycling and type-writing should come in with the sewing machine for their share of abuse. So, also, deranged nutrition, from insufficient nutriment or overtaxation, mental or physical, which lead to impoverishment of the blood. Frequent child-bearing and prolonged lactation also predispose to the same trouble. All these causes act to produce derangement of innervation and circulation, and so favor the development of chronic inflammation.

The exciting cause which plays the most important part in endometritis is imperfect involution after confinement or menstruation. The great majority of cases take their origin from this imperfection of the menstrual or parturient involution.

Other exciting causes which may be mentioned are injuries to the uterus from displacements; the use of ill-fitting pessaries; injuries during confinement, causing puerperal inflammations; abortion, especially if produced; intemperate coition; sexual starvation; and efforts to prevent conception. So far as I know, the same causes produce both cervical and corporeal endometritis, so that in the present state of our knowledge I am not prepared to state any difference in the

causes of the two affections, if any such exists. I am inclined to think, however, that as cervical endometritis is beyond doubt much more common than corporeal, it may be inferred that the one tends to the development of the other.

Treatment.—The prevailing opinion at this time is, that endometritis can only be relieved by local treatment. That is true of certain forms of the affection, but catarrhal endometritis, if seen early, can be cured by general medical treatment and the vaginal douche. This I know from having seen a number of unmarried women who had all the history of endometritis, cervical and corporeal, and recovered under medical treatment. More than that, I have examined, under an anæsthetic, young patients and found endometritis of the variety now under discussion, and they also have recovered under general treatment. Now, while constitutional and local treatment—i. e., medical and surgical—are necessary in the majority of cases, there are cases that can be managed by the physician. Moreover, the surgeon finds that most cases require constitutional treatment, hence the medical side of the subject should be fully considered. At the present time the medical has to give way to the surgical treatment to an unreasonable degree, therefore I shall in this connection fully discuss the general medical treatment—chronic form—of all the inflammatory affections of the sexual organs.

The special treatment of endometritis consists in first removing the cause whenever that is possible, regulating the rest, exercise, and diet, and the use of the hot-water douche. The diet is of much importance. Those who are exhausted and anæmic require the restorative diet and medication fully discussed further on. Others of full habit require spare diet, and little if any animal food.

Certain medicinal agents that act directly upon the sexual organs may be employed with advantage in metritis. In corporeal endometritis attended with profuse menstruation, hydrastis canadensis and ergot are useful. I prefer to use the former, but in obstinate cases both may be employed; the

ergot should be used in small doses. The effect of the hydrastis is remarkable in contracting the blood-vessels and lessening the congestion. When the leucorrhœal discharge is the chief symptom, alteratives are indicated. Iodine and mercury are most efficient. When the general health is good and the patient stout, iodide of soda in medium doses is beneficial. Anæmic weak patients should take iodide of iron. This is most useful in those of the strumous diathesis and phlegmatic temperament.

Mercury has been employed for its alterative effects upon the endometrium. I believe, however, that it has no advantage over iodine excepting in certain cases of endometritis with hyperplastic growths of the mucous membrane. In such cases the continued use of small doses of bichloride of mercury combined with iron, quinine, or arsenic, as may be indicated in given cases, is of much value. Arsenic is very efficient in endometritis complicated with malaria or malnutrition of the skin and mucous membranes.

For a discussion of this subject the reader is referred to the chapter on the management of the nutritive and nervous systems and their derangements as found associated with inflammatory diseases of the sexual organs. This may be called the constitutional or indirect treatment of local diseases.

CHAPTER XIX.

CHRONIC INFLAMMATION OF THE PELVIC ORGANS.
(*Continued.*)

CHRONIC OVARITIS AND SALPINGITIS.

Inflammation of the Ovaries.—There are two forms of inflammation of the ovaries, the acute and the chronic. These are distinctly different so far as their clinical history is concerned. There is another affection closely allied to these which is described by some writers as hyperæmia. Acute ovaritis I have classed with acute pelvic inflammations. That leaves for present consideration the chronic form of inflammation and hyperæmia of the ovaries.

Ovarian Hyperæmia.—While many of the characteristics of ovarian hyperæmia are like those of ovaritis, there is very good reason, based upon clinical evidence, to believe that the two are different both in pathology and clinical history.

Ovarian hyperæmia, as it is generally observed, resembles many of the so-called functional diseases, in that there is derangement of function, which usually disappears, leaving no evidence that there has ever been any change of structure or products of inflammation. This indicates that the pathology is, as the name implies, a congestion, and the consequent derangement of function with the accompanying or resulting pain and suffering. The hyperæmia usually affects both ovaries, and as a rule extends to the uterus, giving rise to derangement of menstruation. The congestion and functional derangements of the uterus may be secondary to or precede the ovarian hyperæmia. There is much in regard to pathology of this affection which is inferred from the symp-

toms, and can not be demonstrated. The congestion may be of long or of short duration, its continuance depending upon the persistence of the causes which give rise to it. When long-continued, it tends to chronic ovaritis and to degeneration of the ovaries and premature atrophy. Should the causes which produce the congestion continue active and no treatment be employed, the affection may continue indefinitely. The general health becomes undermined by the derangement of the menstrual function and the exhaustion of the nervous system; and if the patient is not relieved by treatment or by improved hygienic conditions, she continues a sufferer until the menopause.

With so little that is definite regarding the pathology, one might well ask if the fact is yet established that there is a distinct affection to be known as ovarian hyperæmia. In answer to this, it can only be said that the clinical history points to a lesion of the circulation as the only rational explanation of the phenomena presented in these cases. There necessarily must be present in this affection a derangement of ovarian innervation which is the starting point of this affection. This view of the matter is favored by the fact of the affection depending for its origin upon perversion of the emotions in those of nervous temperament.

Symptomatology.—Hyperæmia of the ovaries occurs most frequently among those who are unmarried, or among young widows who have never had children.

It does not come on abruptly, like an attack of acute ovaritis, though it occasionally does so, but is developed rather gradually. Those most liable to this affection are the nervous and emotional who live in conditions of life favoring excitation without complete functional action of the sexual organs. I have never seen a case of this kind among those who lived under wholesome conditions of life or who were married, bearing and nursing children, and who lived quiet, rational lives. At the beginning there are pain and heaviness in the region of the ovaries, usually accompanied by much nervous irritability and weakness, the patient being easily

excited and as easily fatigued. The pain in the ovaries increases four or six days before the menstrual period. This is due to ovulation, and I have long been in the habit of calling it painful ovulation. Soon after the appearance of these symptoms the menstrual function becomes deranged. There is usually menorrhagia. Sometimes the pain is relieved and the patient feels much better during the menstrual flow, and for a time after it ceases. In some cases the first symptom developed is menorrhagia. The free menstrual flow is conservative at first, relieving the congestion which produced it. I have frequently seen young women, who apparently suffered from ovarian congestion, recover completely after one or more free attacks of menorrhagia. When the excessive menstruation does not relieve the congestion, which it may not do if the causes which produced it are continued, it leads to anæmia and nerve exhaustion, and this state of health may continue indefinitely.

There are other symptoms which may be mentioned, as backache and general pelvic tenesmus, increased on walking sometimes, but not always. In the less severe forms of hyperæmia of not very long standing, muscular exercise gives relief, not for the time only, but is oftentimes permanently beneficial. There is often irritability of the bladder, which is purely nervous.

Physical Signs.—There is tenderness on deep pressure made in the iliac regions, not acute, but of that dull character which is peculiar to the ovaries. As the disease affects both ovaries, as a rule, there is tenderness alike on both sides.

Bimanual examination usually shows tenderness better than abdominal pressure, but I have found that in these cases it is very difficult to grasp the ovaries between the two hands, owing to the fact that the abdominal muscles are tense; while in the majority of cases there is tenderness if pressure is made upon the ovaries, either through the vaginal or abdominal walls, I have seen many cases in which steady but not too heavy pressure in the iliac regions gave relief.

Perhaps these were cases of the kind that Charcot calls hystero-epilepsy, in which the convulsions are relieved by pressure upon the ovaries. I have seen some of Charcot's that appeared to be due to ovarian hyperæmia.

The physical signs obtained are rather negative, but by excluding the evidence of other ovarian affections, and taking the history into account, a presumptive diagnosis can be made, and the diagnosis will be confirmed by the subsequent history. Under treatment and improved moral and physical hygiene, recovery will take place much more promptly and completely than in chronic inflammation.

In connection with this affection of the ovaries, especially if it has existed for several months, there is usually congestion of the uterus and vagina which yields promptly to medical treatment.

Prognosis.—The great majority of patients recover under appropriate treatment. In fact, many of them recover after the causes are removed without any treatment whatever.

Causation.—Overstimulation of the emotions in those of a nervous temperament is one of the chief causes of ovarian congestion. This is operative among those who are not usefully employed, but permitted or even encouraged to turn their attention to the procreative function while they are still undergoing development. Stimulating tonics which create an appetite which is not satisfied with food will cause gastric congestion, and all the consequences which arise therefrom. In like manner stimulating the sexual appetence of unoccupied emotional young girls by evil influences or improper associations leads to ovarian congestion. Those who have lived in the proper exercise of the sexual function, but have been abruptly cut off from normal gratification, are prone to ovarian congestion. Indulgence beyond normal gratification is also said to have produced the same result. All these causes are to a great extent psychical, but ovarian congestion may be produced by purely physical causes. It may be secondary to endometritis, sedentary habits, tight clothing, and constipation, which may interrupt the free cir-

culation in the pelvic organs. It is rare, however, that cases of ovarian congestion can be traced to such causes.

Treatment.—The removal of the cause, when that can be accomplished, is, as I have already said, often sufficient to give relief. The termination of an engagement in marriage has cured the menorrhagia in many cases, and complete recovery has followed when pregnancy occurred.

A like benefit has been brought about in younger patients by directing the attention to something other than self and the feelings and emotions. A change from books and society to the woods and fields, and outdoor occupation in the way of amusements, should be employed. Bathing is useful—either sea bathing or the shower bath—if the patient is strong enough to bear it. Tonics to restore the general strength, nux vomica being the most efficient; counter irritants, ergot and bromides complete the list of therapeutic agents.

The tonic and ergot should be given through the day, and the bromide at night to secure rest and sleep.

Chronic Ovaritis.—*Pathology.*—The study of the pathology of ovaritis derives a special interest from the fact that the ovary differs from all other organs of the body in that its function is performed at the expense of a portion of its structure which is never restored to its original condition. The rupture of each Graafian vesicle in ovulation causes the destruction of the vesicle. Rudimentary vesicles mature and repeat the function of their predecessors, and are in turn destroyed. Finally, the supply ceases, and the ovary, worn out in structure, becomes functionally incompetent long before the general organization has reached the end of its life and activity. In all other organs of the body, function is effected through cellular disintegration and restoration.

This peculiarity in the natural history of the ovary makes it difficult for the superficial observer to distinguish between the normal degeneration and the structural changes which result from chronic ovaritis. Experts also find it no easy matter to distinguish, by gross appearances, the atrophy

of old age from the cirrhosis and contraction of inflammation.

The pathology of ovaritis is characterized by changes of structure brought about first by areolar hyperplasia, then by atrophy of the normal tissues, and finally ends in a condition of cirrhosis. In this respect the morbid process and its products resemble degeneration more than inflammation, as observed in other organs. In the natural history of its pathology chronic ovaritis is more like certain forms of chronic nephritis. Owing to these peculiar and distinguishing features, the affection has little in common with acute puerperal or specific ovaritis, or with secondary acute ovaritis due to peritonitis, and therefore all such conditions will be carefully excluded from the discussion of the subject in hand.

The first deviation from the normal toward the pathological is deranged innervation, the ovary, owing to its important office and intimate relations to the other organs, being peculiarly prone to reflex disturbances. These, though temporary as a rule, when oft repeated and prolonged in duration, induce changes in the circulation which impair nutrition and finally produce changes of structure. This ovarian hyperæmia, the first step in the process, may subside, and complete recovery follow. Reliable evidence of this has been obtained, first, by clinical observation of cases which have given all the signs and symptoms of ovarian congestion, and which, under careful management, have completely recovered.

Secondly, I have not infrequently found, by inspection after laparotomy, a prolapsed, tender, markedly hyperæmic, and painful ovary, but presenting no apparent change of structure except œdema, that, after being fixed in place by stitching the utero-ovarian ligament to the upper border of the broad ligament, was completely relieved. The continuation of the hyperæmia slowly produces those structural changes which invariably arise from prolonged malnutrition. The first noticeable changes take place in the blood-vessels themselves. They become dilated, and a peculiar degenera-

tion of their walls occurs. These changes have been elaborately studied by Dr. E. Noeggerath, who advanced the idea that these vascular changes were closely related to the genesis of ovarian cystomata. This may be true in certain cases, but it more frequently ends in areolar hyperplasia of the stroma, which gradually goes on, and in time crowds out all the normal structural elements of the ovary. Finally a true cirrhosis is produced. With these changes in the blood-vessels the circulation is interrupted to a degree that causes œdema, which increases the size of the ovary and renders it softer. Apoplexies sometimes occur, and occasionally one or more of the blood-clots may be seen near the surface. These conditions can be distinguished from a diseased Graafian vesicle by the staining of the tissues around the clot. Apoplexies occur in the early stage of the ovaritis, and gradually disappear as the process of hyperplasia proceeds to a complete cirrhosis. These changes explain some of the important facts in the clinical history. The ovary, which is found enlarged, softened, and tender to the touch, will, in months afterward, appear subnormal in size. Likewise the same lesions may be recognized upon inspection after laparotomy, if one has become familiar with them by previous study.

While hyperplasia of the stroma is going on, the follicular elements undergo certain changes. The contents of the follicles become cloudy from degeneration of the epithelial elements. The gross appearance of the ovary at this time would lead one to suppose that there were a number of vesicles approaching maturity, but the uncommon number of these is evidence that they are abnormal.

Symptomatology.—The history of chronic ovaritis includes both local and constitutional symptoms. The constitutional derangements are not acute, but are usually marked by depression of the nutritive and nervous systems. The reflex derangement of the digestive organs is manifested by capricious appetite, nausea, and sometimes gastralgia. The bowels are usually constipated and tympanitic. There is often

nervous debility attended with great emotional disturbance. I believe that I have seen more marked derangement of the brain and nervous system caused by chronic ovaritis than by the reflex influence of any other chronic affection of the sexual organs. These constitutional symptoms are progressive, the patient's general health becoming more impaired month after month as the disease advances. The local manifestations are pain and derangement of menstruation. There is often menorrhagia ; in fact, that is the rule, but in cases of long standing I have seen amenorrhœa. The ovarian pain—painful ovulation—is usually increased for several days before menstruation, and is relieved to some extent when the flow has lasted a day or two. The menstrual pain is much more severe and persistent if there be a uterine disease accompanying that of the ovaries. The ovarian pain varies according to the tissue affected. When the stroma alone is the site of the disease the pain is less severe. Much more suffering is experienced when there is circumscribed peritonitis or salpingitis. Hysterical women sometimes have ovario-epilepsy when suffering from this affection.

All these symptoms are aggravated by standing, walking, riding, or sitting in a stooping position for any great length of time. Most comfort is obtained by the recumbent position. Sexual excitation and coitus cause so much suffering that the patient shrinks from both. There are exceptions to this rule, but not many.

Physical Signs.—The ovaries are tender to the touch, and the pain excited by pressure lasts for a long time as a rule. The character of the pain excited by the touch is described as ovarian. When the ovary is enlarged or changed in form it can sometimes be made out by the bimanual touch. The ovary is usually movable, and its separation from the uterus can be distinguished. It will be observed that the symptoms and physical signs of chronic ovaritis closely resemble those mentioned as occurring in ovarian hyperæmia. The fact is that the two affections have many features in common ; hyperæmia being a part or the initial stage of inflammation,

the manifestations of the two affections are similar. There is a close resemblance between ovaritis and ovarian neuralgia, but the differences are also equally marked. In neuralgia there is no evidence of inflammation, it is not continuous, and very often the ovary is not tender. In making a diagnosis due attention should be given to all the facts relative to cause, duration, symptoms, and signs.

Prognosis.—If placed under treatment early the chances of recovery are favorable. This is still more certain if only one ovary is affected. The disease may go on in one ovary to complete destruction of the organ, and after this premature atrophy all suffering may subside except occasional neuralgic pain; and the other ovary may perform the ovarian function. In case the disease is complicated with inflammation of the neighboring peritonæum, and there is marked destruction of tissue from the inflammation, it may be necessary to remove the ovaries. There is not a great mortality from this affection. I have never seen a fatal case, but I have seen several in which life was not worth living.

Causation.—A poor quality of ovaries, due to imperfect development and growth, predisposes to the disease, I presume, because that rule applies to all organs of the body. According to my observations, the cause which most frequently obtains is imperfect menstruation. When the uterus is undersized or flexed forward or backward, and the menstrual flow is scanty and attended with pain, the ovaries are liable to take on chronic inflammation. The eruptive fevers are said to affect the ovaries, but I believe that acute ovaritis is more liable to occur under these circumstances. It is probably true, also, that gonorrhœa causes acute rather than chronic ovaritis.

The strumous diathesis (which I understand to be that condition of organization which invites glandular tuberculosis) predisposes to chronic ovaritis, and inherited or acquired syphilis does likewise.

Much has been written about endometritis as a cause of ovaritis, upon the theory that the structure of the endome-

trium and that of the ovaries have a common embryonic genesis, and the fact that the two diseases are often found together, but this is still an open question.

General Treatment.—The indications for general treatment are to lessen the blood supply and relieve pain by correcting the deranged innervation. This demands rest in the recumbent position in the early stages. At the same time general exercise should be enjoined, either by massage or gymnastic exercise in the reclining position. I specially desire to commend systematic calisthenics, in the recumbent position, as a most valuable aid in improving or maintaining the general health in many diseases of the pelvic organs which require postural treatment. The condition of the digestive organs should be carefully watched. The poor appetite, coated tongue, and constipation, or the capricious appetite, flatulence, and occasional diarrhœa, can be relieved by a number of small doses of mercury and a laxative. The saline laxatives are the best when they act without causing flatulence. The use of Saratoga waters often gives good results by improving digestion and keeping the portal circulation active. By keeping up a free elimination by the bowels and kidneys much benefit is obtained. This applies in cases that are apparently debilitated, but are really suffering from oppression. Many times I have stopped the use of tonics, stimulants, and forced feeding, and given saline laxatives, with the effect of increasing the patients' strength. To relieve the pain and lessen the hyperæmia, the bromide of sodium and fluid extract of hydrastis canadensis are by far the most potential agents that I have found; they are given in combination, and in doses sufficient to produce the desired effect—twenty to thirty grains of the bromide and ten to twenty minims of the hydrastis, three times a day, until the physiological effects of the bromide are noticed in a mild degree. If the hydrastis is given alone in such doses it sometimes causes pelvic pain of a dull character, but when combined with the bromide it has no such effect. These agents are most efficacious in the beginning of the attack, and hence

they should be discontinued as soon as the pain is relieved in a marked degree. Should the pain and tenderness return at the succeeding menstrual periods, the bromide and hydrastis should be resumed. In some cases much larger doses of bromide are required, and in others it fails altogether to relieve pain. Then it is necessary to employ other agents, especially during menstruation. Ten-grain doses of salicylate of soda and five of antipyrine, given between meals and in the night, when the stomach is empty, answer for some; others, more especially those markedly debilitated, do better on full doses of aromatic spirits of ammonia, camphor, and chloric ether, with small doses of cannabis Indica. This combination is best suited to those who get relief from gin or whisky, but it is to be preferred, as alcoholic stimulants ultimately do harm, though they may give temporary relief. Direct or local treatment should be adapted to the social state of the patient, and the presence or absence of complications, such as endometritis. In the unmarried, local treatment is often injurious. In fact, in such cases it is better to avoid any examination of the pelvic organs, if the history is sufficiently clear to enable one to make a diagnosis with reasonable certainty. Hot sitz baths, counter irritation, and hot vaginal douches, the latter to be employed by a competent nurse, comprise about all that I employ in the way of direct treatment. The vaginal douche should not be continued unless it is decidedly sedative in its effects. Baths used according to the rules of modern hydrotherapy are of great service.

In weak, nervous patients I begin with the wet-pack, used for half an hour at a time. Those who require a sedative are put into water at a temperature of 95° F. for ten or twenty minutes and then dried by brisk rubbing. When the sedative effects of the bath are no longer needed, the tonic bath should be used.

The general treatment thus briefly outlined gives relief from the more pronounced symptoms. The pain becomes less, and the tenderness also. The general health improves,

and the pelvic congestion subsides. This is apparent in the color of the mucous membrane, and the improvement of the menstrual functions. The treatment should now be modified. Tonics and laxatives may still be required, but alteratives are also indicated. Iodine and mercury are the chief agents. They act upon the ovaries, as they do upon all glandular organs, and modify or arrest the morbid histological changes which take place slowly—small doses of bichloride of mercury, with chloride of iron, when iron is indicated, followed by sirup of the iodide of iron, in doses as large as can be borne. These can only be used when the bromides are relinquished. When giving these alteratives the patient often misses the bromides used to produce sleep. Sulphonal at such times is of great value. In fact, it is the most potent sedative that is at the same time free from ultimate or after-effects that are unfavorable that we have in gynecological practice. When a sedative is required while iodine or mercury is being used, I find that ten grains of salicylate of sodium and five grains of antipyrine, three times a day an hour before meals, give much relief, especially in those who suffer from nervous dyspepsia and flatulence.

Important elements in the treatment are patience and careful watching. Improvement comes, the patient or the physician gives up treatment, and there is danger of relapse. The poor in hospitals often suffer for want of time for prolonged treatment, and this frequently tempts the surgeon to seek more prompt relief by removal of the ovaries. This does not apply to those who have time and means to secure the needed care. Chronic ovaritis is frequently complicated with prolapsus of the ovaries. This generally requires surgical treatment, and therefore is not to be considered here.

Chronic Salpingitis.—Very little was known on this subject until of late years, when surgeons revealed the fact that salpingitis often terminated in pyosalpinx, which required extirpation of the tubes. Opportunity was thus afforded for the study of the pathology of this affection upon the living

subject. I was also assured that the milder forms of salpingitis ended in recovery; at least the process subsided before advancing to the suppurative stage. This is of interest, as it shows that medical care alone is sufficient in this form of the disease; therefore the physician should be prepared for the management of such cases. He should consider the subject well, for the further reason that he may know the limits of his ability to manage such cases, and at the same time be able to tell when they should be transferred to the surgeon.

Pathology.—There is general congestion of all the structures of the tube. The mucosa is thickened at first, and secretes a fluid which is thin and watery, or like milk and water, but does not contain pus. In the severer forms which border upon the acute there is slight perisalpingitis—that is, inflammation of the peritonæum covering the tube. The products of such bygone inflammation were found in connection with structural changes in the tube indicative of chronic salpingitis. These observations were often made in years gone by, and they have all been verified during the practice of abdominal surgery. As a rule, both ends of the tube are closed by inflammatory adhesions. This is a peculiar effect of inflammation of the mucous membrane, and is exceptional. Sometimes the inflammation subsides, leaving no trace of the disease, excepting closure of the canal of the tube.

Occasionally the serous fluid accumulates in the tube, and distending it, forms a small cystic tumor, or there may be several cysts without intercommunication. In this condition the walls of the tube usually become extremely thin. This is known as tubal dropsy or hydrosalpinx. The uterine end of the tube that was closed at the beginning of the inflammation gives way and the fluid is discharged into the uterus. This may end the whole trouble, or the tube become refilled and again emptied, a process which may occur several times, and finally recovery may come after a long time.

Symptoms.—This affection so often follows chronic endometritis that the symptoms of salpingitis are often merged

with those of the primary disease, or are marked by it until slight pelvic peritonitis occurs. Usually there is pain in the affected tube, which comes and goes, and is more decided at the menstrual period. Standing or walking commonly increases the pain. There is no symptomatic fever, but the nutritive and nervous systems are disturbed less or more. In short, the symptoms are the same as in chronic ovaritis, but not so severe or well defined, unless peritonitis comes in as a complication; then there may be slight symptomatic fever and well-defined pain.

The physical signs are tenderness on pressure in the iliac region, and by the bimanual examination the tube may be felt to be indurated, or if dropsical a tumor will be found. The oblong form of the tumor or a series of tumors is characteristic of the disease.

Causation.—Subacute catarrhal salpingitis is nearly always secondary, and therefore caused by the same form of corporeal endometritis. As it frequently occurs in connection with chronic ovaritis, it is possible that the same cause obtains in both affections. The causes of specific and septic forms of salpingitis are not to be considered in this connection.

Treatment.—As chronic salpingitis is almost always secondary to chronic corporeal endometritis or ovaritis, the medical treatment must be directed to the primary disease. For further details the reader is referred to the subject given under the treatment of chronic metritis and ovaritis.

CHAPTER XX.

DISPLACEMENTS OF THE UTERUS.

Dislocation of the uterus belongs mainly to surgery, owing to the fact that the more pronounced cases require surgical treatment. There are, however, many forms which when seen early can be arrested by such general and postural treatment as comes within the province of the physician. Such cases are met among young women who prefer to be relieved without local surgical treatment, and there are others still who suffer displacement after confinement, that come under the same treatment. The physician should be sufficiently familiar with the clinical history of uterine displacements to make a presumptive diagnosis, and decide with a degree of certainty whether a given case can be managed by him or should be at once sent to the special surgeon.

More than that, the physician when familiar with this subject in a general way can do much to prevent dislocations of the pelvic organs that are likely to be produced during development, or to follow parturition, premature or at term.

He is also prepared to institute treatment upon the first indications of trouble, and therefore can do much good with the treatment to be described.

The position of the uterus in the pelvis and the way that it is held in its place must be briefly studied in order that the nature and causes of displacements and their treatment may be more easily understood.

In the first place, it may be said that the uterus is wholly within the true pelvis.

The line on the diagram running between the symphysis

pubis and the promontory of the sacrum divides the true pelvis from the abdomen, and all the pelvic organs, the uterus included, are below this plane—the superior strait, as the obstetricians call it. The long diameter of the uterus corresponds very nearly to the axis of this plane, as represented by the line (Fig. 13), and it is equidistant from the sides of the pelvis.

The position of the uterus varies according to circumstances; but in all its changes it returns to the axis of the inlet of the pelvis, slightly behind the center of the true conjugate. This is sufficiently correct to form a basis from which clinical studies may be conducted.

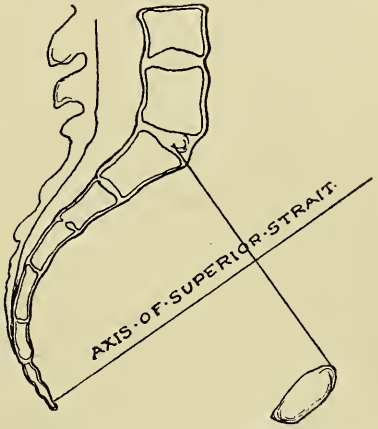

FIG. 13.—Section of pelvis, showing its inclination and the axis of the inlet.

Next in the order of inquiry are the anatomical structures by which the uterus is held in position. This requires a consideration of the structural associations of the uterus and all the other pelvic organs and tissues. The position of the several pelvic organs is as follows: The uterus in the center, Fallopian tubes and ovaries on either side the bladder, in front, rectum behind, and the vagina below. Covering all these, except the vagina, is the peritonæum, out of which are formed the ligaments which have much to do in keeping the uterus in place. The peritonæum, while it covers the pelvic organs, is attached to the bony walls of the pelvis through the medium of the periosteum and areolar tissue, so that one end of each ligament may be said to have an attachment to the inner side of the pelvic bones. The round ligaments contain muscular tissue in considerable quantity, and are really outgrowths from the uterus in the form of round cords, which start from the uterus near the proximate ends of the Fallopian tubes, and, sweeping round the outside of the

pelvis, pass out through the inguinal rings into the labia majora.

The utero-vesical ligaments, in addition to their attachments to the uterus and bony walls of the pelvis, are also connected indirectly to the anterior vaginal wall by intervening areolar tissue. The utero-sacral are connected in the same indirect way with the upper portion of the posterior vaginal wall, and also to the rectum, on the left side at least.

At the junction of the supra-vaginal portion of the cervix and body of the uterus all the ligaments, except the round ones, are attached. Here also the anterior and posterior vaginal wall and a portion of the bladder join these other structures.

The union of these structures at this point is not direct, but is through the intervention of areolar tissue which is found in considerable quantity in this region. From this it will be seen that these ligaments are continuous from side to side, and also from before backward.

The chief function of these ligaments, aided by the anterior vaginal wall, is to keep the uterus and bladder in position. This is evident from the fact that the uterus remains in place for a considerable time when all other means of support are removed.

A similar function may be claimed for the round ligaments, at least so far as their effect in preventing the backward displacement of the uterus.

The ligaments, the vagina, and the other pelvic organs all aid in keeping the uterus in position, and are sufficient to do so under ordinary circumstances. Still, when extraordinary strain is brought to bear upon the pelvic organs, the pelvic floor supplements these supporting structures. Moreover, the relation of the trunk to the pelvis has much to do, if not in keeping the pelvic organs in place, certainly in freeing them from pressure from above.

The pelvis is so placed that, in the erect posture, its cavity is behind rather than beneath the abdomen, and the abdominal muscles partially divide the greater cavity from the

lesser. This is shown in the accompanying diagram, where the arrow indicates the direction of the force transmitted to the pelvis through pressure from above (Fig. 14).

There is very little direct abdominal pressure upon the pelvic organs in the erect posture. The axis of the pelvis is backward and downward, while that of the abdomen is perpendicular, so that the pressure is indirect from above.

Some claim that a suction power is exerted upon the pelvic contents by the diaphragm. It is said to act like a piston in the cylinder of a pump. There is reason to believe there is something in this, from the fact that, on examination through a Sims speculum, the uterus is seen to rise and fall with respiration. This motion is to a large extent arrested when the patient is in the erect posture.

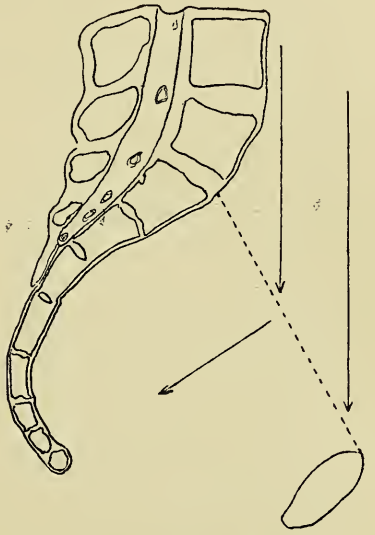

Fig. 14.—The normal inclination of the pelvis and the transmission of force from above.

If it is a fact, as it appears to be, that the abdominal organs are fixed by suspension in their normal position, and that in their descent during this limited motion the pressure upon the pelvic organs is indirect, then this relationship contributes to maintain the position of the pelvic organs as surely as if there were some traction or suction action of the diaphragm tending to draw these organs upward.

In regard to the pelvic floor and its relations to the displacements of the uterus, it is only necessary to say that, while the pelvic floor does not directly support the uterus, it indirectly aids in doing so.

DISLOCATIONS OF THE UTERUS.

The uterus is peculiarly subject to physiological changes of position. The bladder in front causes the uterus to move forward and backward according to its dilatations and contractions. In a similar but much less extensive way, distention of the rectum acts to push the uterus forward. The abdominal pressure from above is constantly changing, and is, therefore, constantly affecting the position of the uterus less or more.

These changes of position, when limited in degree, are physiological, the organ promptly returning to its original position as soon as the displacing influence is removed. It is only when the uterus remains displaced permanently, or is carried far beyond the physiological limits, that the dislocation is to be regarded as pathological. When this occurs, the malposition gives rise to suffering from deranged menstruation, circulation, and innervation, and in some cases to sterility. Usually the functions of the bladder and rectum are disturbed and the general system suffers from reflex influences. It is only when such symptoms as these are present that displacements of the uterus claim the attention of the gynecologist.

There are a great many forms of displacement of the uterus, if every change of position of that organ be taken into account, but of those that occur as primary affections there are only two that are often seen, and one that is very rare. These are downward, backward, and forward—that is, prolapsus, retroversion, and anteversion.

Prolapsus and retroversion are really the only forms of displacement which practically claim attention in this connection. These two forms of displacement are the only conditions of malposition that can be directly treated with favorable results.

PROLAPSUS AND RETROVERSION OF THE UTERUS.

The downward and backward displacements of the uterus are so much alike in clinical history, causation, and medical treatment, that I shall consider the two together, pointing out any marked differences that the physician ought to know. The pathology in every detail must be known to the surgeon who undertakes the treatment of displacements caused by injuries which require operations or pessaries for their relief; but the physician who deals with the simpler cases can not apply such knowledge practically. Great refinements have been made in the classification of uterine displacements, but for practical purposes the simplest is all-sufficient.

Prolapsus is simply a descent of the uterus. All the degrees of prolapsus in which the uterus still remains within the vulva are termed incomplete, while those in which it protrudes partially or completely beyond the vulva are called complete. Retroversion is displacement backward. Two or more degrees are usually given. In the first the fundus remains just beneath the promontory of the sacrum, and in the other the uterus is at right angles to the axis of the pelvis. There is always some retroversion connected with prolapsus, and some prolapsus in retroversion.

This latter arrangement of the subject is perhaps as easily comprehended and as useful in practice as any other.

Pathology.—Displacements of the uterus take place slowly, as a rule. In the few cases that I have had an opportunity of watching from beginning to completion, the displacement has been gradual. At first the uterus descended to the first degree of prolapsus, and then to the second, and finally to the third or complete displacement. The time occupied in completing these changes of position varies from months to years. The changes which take place in the supports of the uterus and the other pelvic organs during the progressive development of the malposition are usually the same in all cases with few exceptions, but the order in which

they appear differs according to the cause. This again depends upon the point in the structures at which the lesions begin to develop. There are three methods of development of prolapsus and retroversion. In the first, the uterus leaves its place because it is too heavy and makes too great demands upon its immediate supports, or else these supports become defective from pathological changes. The second in order is by loss of the pelvic floor, which permits the vagina, bladder, and part of the rectum to descend, and then the uterus follows. The third in order is made up of the two others, the first and the second, all the conditions mentioned in those being operative at the same time.

The changes in the supports are elongation from imperfect involution after parturition, or stretching produced by enlargement of the uterus, or pressure on it from above by long standing, stooping, or lifting. In the former condition the supports are too long; in the latter they are attenuated as well as elongated. There is also, in some cases, loss of the areolar and adipose tissue, and the pelvic fascia has lost its strength of fiber. This traction upon the blood-vessels is presumed to interrupt the return circulation. Whether that is a fact or not, there is usually a passive hyperæmia of the parts in these displacements. These changes of the position and relations of these parts are gradually developed.

The second order of the development of prolapsus—that is, where the loss of the pelvic floor is the starting point of the malposition—belongs to surgery and need not be discussed here.

Prolapsus of long standing changes the structure of all the tissues. Atrophy of the muscular tissue of the vagina and pelvic floor occurs, and the ligaments of the uterus lose their characteristics so that they can not be restored to their original state by any means.

There is a prolapsus which occurs as the result of degeneration of the supports of the uterus. It occurs in feeble old women, and is taken up in the diseases of old age.

Symptomatology.—The natural history of prolapsus uteri,

as manifested by symptoms, differs to some extent in different cases, though the pathological conditions appear to be the same in all. The suffering caused varies according to the general health and nervous sensitiveness of the subjects affected.

The symptoms indicative of these displacements may be classed under two heads: First, the derangement of the functions of the other pelvic organs, and, second, the disordered nutrition of the tissues of the pelvic viscera generally. The dragging of the uterus upon the bladder and rectum and the abnormal pressure cause irritation, which gives rise to rectal and vesical tenesmus. The constant desire to evacuate the rectum and bladder is often very distressing. These symptoms are greatly aggravated by walking, lifting, coughing, and especially by standing, and they are all relieved in a very marked degree, often completely so, by lying down. This difference in the feelings of the patient, when in the erect or recumbent position, is a diagnostic point of very great value. The recumbent position generally gives relief in the majority of the diseases of the pelvic organs, but not so markedly as in displacements of the uterus.

The malnutrition produced by irritation and deranged circulation leads in time to inflammatory affections of the uterus and other pelvic organs, not an acute inflammation which can be seen, but a hyperæmia accompanied by tissue changes such as areolar hyperplasia and catarrhal states of the mucous membrane. It is probable that the endometritis so common in displacements may in many cases precede the displacement, but the displacement certainly tends to keep it up. Menstruation is often deranged, menorrhagia is common, and in retroversion the flow is offensive in odor.

The symptoms manifested by the general system in this affection are not marked or special. Beyond the backache and deranged digestion, and the depression which comes from a consciousness of having some chronic ailment which impairs locomotion and general usefulness, there is not much that need be mentioned.

Causation.—The fine adjustment of the uterus and the means which keep that organ in its place, and yet permit considerable motion, are such that any increase of weight of the one or loss of strength of the other will cause displacement. The formation of the pelvis, and its position in relation to the vertebral column ; the character of the fiber of the uterine supports, the quantity and consistence of the areolar and adipose tissue ; one's habits in regard to clothing, position in standing and sitting, if maintained unduly long, character of occupation, strength or weakness of general organization ; and the accidents and injuries incident to child-bearing—all have certain influences in causing dislocations of the uterus.

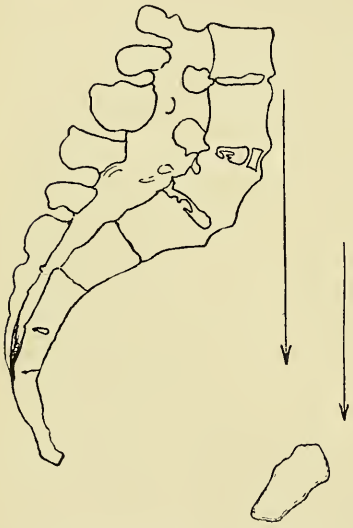

Fig. 15.—Increased inclination of inlet. Pelvic organs escape pressure.

A shallow and wide pelvis which is more than sufficient for the accommodation of its contents, while it is favorable to easy parturitions, predisposes to descent of the uterus. Again, if the pelvis is tilted forward, so that it is brought more immediately under the axis of the abdomen, the pelvic organs are constantly under greater pressure than normal, and prolapsus and retroversion are likely to occur. These facts regarding the form and position of the pelvis are factors of great importance in the problem of uterine displacement, and deserve more attention than has been given to them.

The habit of walking erect has the effect of maintaining this favorable relation of the abdomen and pelvis, while stooping disturbs this harmony of relative positions. In this, both in regard to formation and habit of standing and walking, there is the greatest diversity among women. The

tissues of the uterine supports, when defective in quantity or quality, are incapable of performing their functions. These effects may be the result of imperfect development such as occurs in those of sedentary habits in youth, or they may come from debilitating diseases. In the one case they have never been well developed, and in the other they have become atrophied. Standing and walking to an extent that is fatiguing bring undue strain upon the pelvic organs, and, if persisted in, will in time produce prolapsus. Active exercise, with liberal periods of rest, will tend to strengthen the uterine supports, but fatigue will overcome their power of resistance. Stooping forward while in the sitting position has a twofold injurious influence—it interrupts the return circulation in the pelvis and impairs the nutrition of the organs, and brings increased downward pressure to bear on them. The position of the girl at the sewing machine or typewriter, and that of the lady of leisure, bent over in her easy-chair while reading a novel, are alike hurtful; but worst of all, the schoolgirl, bending over her desk all day, while her body is or should be developing, suffers the most injury. Among the errors in the use of clothing the abuse of corsets is a subject already discussed.

Heavy lifting, if persisted in, is a cause of displacement. This is noticed among the poor who do heavy work. The women of India, who were at one time supposed to bear children with ease and impunity, and to suffer less from uterine affections than our American women, are very subject to complete prolapsus uteri, caused, no doubt, from their want of care after confinement and in carrying heavy burdens. General weakness, induced by exhausting diseases and extreme old age, affects the pelvic organs very decidedly. This, no doubt, is the cause of prolapsus uteri in women with consumption and in the very aged.

The most important, certainly the most frequent, causes of uterine displacement are the injuries and improper management incident to child-bearing. The condition of the uterine supports after parturition is that they are all greatly

enlarged through the growth of gestation, and, while they are competent to maintain the large uterus which rests in the abdominal cavity, they must undergo involution in conjunction with the diminution of the uterus. If this involution fails in the uterine ligaments and vagina while it goes on in the uterus the supports fail, because they are too long and relaxed. Imperfect involution, not only of the uterus but of all the other tissues and organs of the pelvis, is seen to give rise to displacement. This imperfect involution may be due to post-partum inflammation, or to the patient resuming the active duties of life before involution is completed.

Finally, enlargement of the uterus, whether from imperfect involution, inflammation, or the presence of neoplasms, will cause prolapsus. This will occur although all the supports may be normal; the balance between the supports and the organs to be supported being disturbed by the increased weight of the uterus, descent will occur.

Treatment.—The medical treatment of displacements of the uterus is limited to recent cases that are caused by temporary enlargement of the uterus and defects of the uterine ligaments, and cases in which the uterus can be readily made to resume its normal position. This treatment is sufficient in itself and wholly within the province of the physician. The surgeon also finds it applicable and valuable in conjunction with surgical treatment.

The indications are, first, to correct any defects in clothing and habits of life that may cause or keep up the displacement. Loose, light clothes should be worn, and sitting, standing, walking, or lifting heavy weights should be avoided. The next thing in order is to restore the uterus to its position by the knee-chest position. This I have employed in an exaggerated form by placing the patient upon a movable lounge which can be tilted. (See Fig. 16.)

This position should be taken two or three times a day, and maintained for five or ten minutes. Then the patient should rest upon the back or side, on the table or lounge

tilted toward the head. When such a lounge is not available, an ordinary sofa can be raised at one end and made to answer the purpose. By this postural treatment the uterus can be gradually made to assume its normal position. I am aware that some of my readers will feel that this is a slow and uncertain way of treating displacements; but I must say

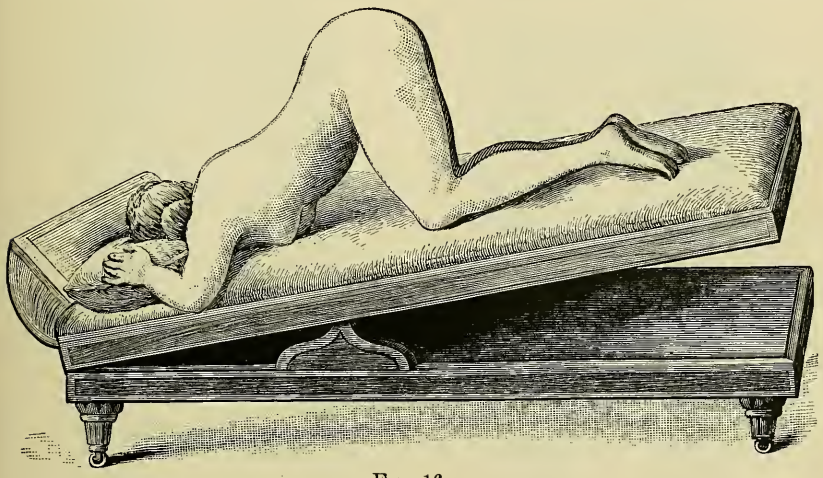

Fig. 16.

that in the class of cases which I have described and to which this method is adapted, it will be found satisfactory to the general practitioner, and when successful, as it often is, gives a far more permanent cure than is usually obtained by the use of pessaries.

In connection with the postural treatment proper external support should be employed.

A careful and exact investigation concerning the center of gravity and lines of support has been made by Dr. Dewees, of Salina, Kansas, whose conclusions may be summed up briefly as follows: The erect posture consists principally in a transverse and antero-posterior balance of the body (upper half) upon the center of gravity, which point is in the lumbar-spinal curve (see Fig. 17).

We notice that the lumbar-spinal curve lies on a line perpendicular to the plane of the ankle, and can thus preserve

spinal symmetry and pelvic obliquity. Hence it is impossible for the upper part of the body to make any decided movement without the lumbar spine first shifting its position : in stooping, it retreats backward ; in bending back, the center advances.

When this lumbar spine is misplaced, as in deformities, it

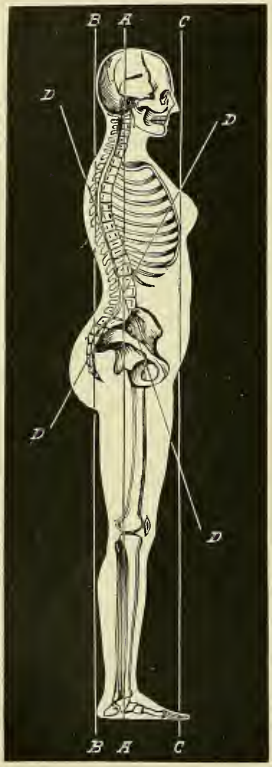

Fig. 17.

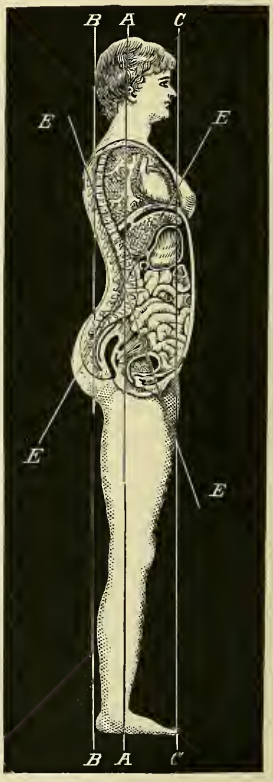

Fig. 18.

must be so acted on that the gravity of the body brings it back to the true axis.

A normal body in the erect position, showing the proper relationship of the viscera, is seen in Fig. 18.

It seems that the pelvic organs are normally supported and kept in place by the obliquity of the pelvis and the elasticity of the abdominal and spinal muscles, both of which

Fig. 19.

Fig. 20.

are maintained by the advancing curve of the lumbar spine in the true axis of the body.

Fig. 21.

When the lumbar spine retreats, falling on a line behind the one indicated in Fig. 17, the distance between the sternum and pubes is shortened, and as a result the abdominal muscles relax from loss of tension. The organs in the abdomen must therefore descend. Pelvic obliquity and the circulation in the pelvic cavity are greatly impaired.

With regard to uterine displacements it is possible that the primary cause is a relaxation of spinal and abdominal muscles and consequent unnatural gravitation.

If this laxity cause uterine displacement, the means of cure are manifest; and Dewees recommends (Figs. 19, 20 and 21) the natural body brace, the combined forces of which, he claims, all tend to restore normal relationships and positions.

I have found in my own practice that the use of external support has all

the advantages claimed for it by Dr. Dewees. This I have seen while employing support that was far from being as suitable and well adapted as his. I can therefore the more strongly recommend the method of Dr. Dewees. In the great majority of cases the hot-water douche employed as Dr. Emmet directs is of value. The water should be medicated according to circumstances. If there is any uterine catarrh or vaginitis, as well as relaxation of the tissues, astringent douches are not effective.

Displacements of the uterus give rise to derangements of the nutritive and nervous systems similar to those found in chronic inflammatory affections which have been discussed. For the treatment of those the reader is referred to the portion of the work on the general management of the constitutional affections.

CHAPTER XXI.

CONSTITUTIONAL DERANGEMENTS DUE TO OR ACCOMPANYING INFLAMMATORY DISEASES OF THE SEXUAL ORGANS, AND THEIR TREATMENT.

In the subacute or catarrhal forms of endometritis there is always some disturbance of the nutritive and nervous systems. The degree of disturbance varies according to the general temperament and organization of the patient. Robust, phlegmatic women often have an endometritis, especially if limited to the cervix, for years without showing any marked impairment of the general health, while the sensitive woman —the *sensitif* or *actif-sensitif*—with a highly developed nervous system, often suffers in a marked degree. Somewhat similar disturbances may also come from ordinary displacements of the uterus. The derangements of nutrition are, as a rule, doubtless due, first, to deranged innervation, the indigestion, loss of appetite, constipation, and ultimate malnutrition being evidently produced by it and nothing else. The consciousness of some disease of the sexual organs almost invariably gives rise to a certain amount of anxiety and leads to introspection, which, joined with the peripheral irritation, produces the general disturbances referred to.

These impaired conditions of nutrition aggravate or tend to prolong the local lesions which stand first in the list of the causes of the constitutional disturbance. Where there is a profuse leucorrhœal discharge that tends to depress and induce exhaustion by robbing the blood of highly organized constituents, the nervous disturbances of the patient are at the same time thereby increased. The appetite is now

capricious, then abnormal in activity, and again there is a dislike for food, these extremes indicating that it is due to deranged innervation. These indications of disease are most marked in cases of corporeal endometritis, which is often attended with attacks of nausea as well as by capricious appetite.

When these symptoms are present, while the tongue is normal in appearance and the bowels act regularly, it is evident that it is a reflex gastric disturbance. In other cases the tongue is coated, the appetite is at all times poor, the bowels are usually constipated, and the eye and skin frequently assume a yellow tinge, indicating hepatic torpor. There is usually labored digestion, indicated by a sense of oppressive fullness after eating, flatulence, distress, discomfort or even pain in the stomach.

In purely nervous gastric disturbances attended with dyspepsia there is very often either hypersecretion or a superacid condition of hypermotility. In the former, there is very often a sense of burning in the stomach ; in the latter, acid eructations are noticeable. Food is carried out of the stomach before it is perfectly digested, and hence there are intestinal flatulence and disturbance of the bowels shown by alternating attacks of constipation and diarrhœa. This hypermotility can be diagnosticated by giving the patient a light breakfast, and an hour or so afterward washing out the stomach when it is found empty. In this condition the patients very often have an abnormal craving for food an hour or two after having taken a fairly hearty meal. Again, the reflex nervous effect may show itself by depression of the motor functions of the stomach and intestines, then by great sensitiveness of the gastric mucosa, and finally by a diminished secretion. First may come mere atony, when ingesta are delayed in their passage into the intestine. The stomach then is apt to become dilated, and finally what are known as "bilious attacks" follow.

Treatment.—The treatment of the nervous dyspepsia, as it has been called and by which we understand impaired or

variable appetite, indigestion, and deranged innervation, is to remove the uterine disease which gives rise to it; but while the local or surgical treatment is progressing much can be done to add to the comfort of the patient and to further and hasten the recovery. In these cases I have found that gastric sedatives give the most marked relief. Moderate doses of subnitrate of bismuth or full doses of oxalate of cerium, given half an hour or an hour before meals, suspended in mucilage of acacia and cherry laurel water, are often beneficial, especially if there is hypermotility. When the appetite is fair and digestion is not hard but labored, pepsin, charcoal, and the bromide of soda, taken an hour after meals, often give most marked relief. When this does not, I give it before meals, and find that occasionally in certain cases it answers better. This can only be determined by trial.

With deranged digestion due to imperfect secretion, and possibly gastric catarrh, small doses of calomel for a day or two, followed by a saline laxative, preferably the phosphate of soda, pave the way, as it were, for further treatment. If the tongue remains coated and there is evidence of a superacid condition, I give half a drachm of phosphate of soda an hour or thereabouts before meals, well diluted, and then after meals administer pepsin diastase and small doses of nux vomica with some aromatic. Should these not keep the bowels regular, I increase the quantity of phosphate of soda; and if this fails, I then give a combination of two grains of ox gall with moderate doses of pepsin, and one eighth or one tenth of a grain of nux vomica in a pill before meals and pancreatin after meals.

In obstinate cases of constipation I add to the ox gall one grain of quinine, one tenth grain nux vomica, one tenth grain belladonna, and one or a half grain of compound extract of colocynth, with a grain of ipecac. This in pill form before meals answers very well. In patients that are somewhat robust and not especially inclined to flatulence I regulate the bowels by giving a dose of some of the mineral waters, as

Rubinat Llorach. To increase the appetite I give the tincture of calumba, well diluted, before meals, or, in many cases what is better, when the stomach is irritable, infusion of the same. After meals some of the digestives, like pepsin, pancreatin, and diastase, answer excellently.

The treatment of these cases which begin with *atony* should be rest in bed, a change of climate and surroundings when possible, electricity to restore tone to the muscular wall of the stomach and washing out that organ; but this latter should not be done too frequently. The diet is anything, in reason, the patient can digest.

Mercury, iron, strychnine, bismuth, and hydrochloric acid are the best drugs in these cases; and where the "blue pill" is too powerful, Hunyadi or Friedrichshall water can be given, hot, in the morning. Sodium and magnesium aperients are excellent all through this plan of treatment.

The Nervous Disturbances.—The condition of the nervous system in uterine disease differs according to the stage and the duration of the affection. At first comes occasional headache, discomfort, or a disagreeable feeling in the head; then there is a sensation of weight on top of the head, with lack of coordination of thought to a very limited extent, and, following these, usually in cases that have not existed for a great length of time, are irritability, restlessness, disposition at times to become depressed, with sleeplessness, difficulty in getting asleep, or waking up after a short repose.

In addition to the local treatment, especially the sedative effect of the hot vaginal douche, bromides answer well; a dose in the afternoon and another at bedtime, sufficiently large to secure a quiet night's rest, are all that is necessary. It is perhaps the most satisfactory of all the sedatives that I can recommend. Valerian, lavender, and their allies, which have been highly recommended, I have found in most of my cases to aggravate the difficulty, and prove worse than useless. I am obliged to rely upon bromides. When there is evident nervous exhaustion, then nerve tonics as well as sedatives are required. The best of these I find to be a

combination of strychnine and belladonna in small doses, with camphor and lupulin as a sedative. These are given, as the bromides are, in the afternoon and at bedtime. In these cases bromides sometimes must be prescribed, especially if there is difficulty in maintaining prolonged sleep; but I find it necessary in such cases to give nux vomica with the bromide, and I usually add small doses of arsenic.

The use of baths is advisable, beginning with a tepid or warm bath, and the temperature is gradually lowered until it becomes somewhat of a stimulant or tonic. All the above applies to cases in which the nervous disturbance is not decidedly marked. I shall refer again to the treatment of neurasthenia while discussing the constitutional treatment of diseases of the ovaries and tubes.

Rest in the recumbent position is of great influence in relieving all forms of uterine inflammatory diseases. In the subacute form continual rest in bed is not necessary; it is better that the patient should have short periods of exercise alternating with periods of rest during the day, and abundant rest and sleep at night. While in the recumbent position the pelvis is elevated and a certain amount of relief from hyperæmia is obtained. In cases of uterine disease associated with anæmia and sleeplessness Dr. Emmet found great improvement by giving the patient a low pillow and elevating the foot of the bed. The knee-chest position assumed for a few minutes in the morning before rising, and again before going to sleep after retiring, gives relief, and this may be practiced several times during the day also with benefit. The use of baths adapted to the condition of the patient, so as to keep the skin in good condition and stimulate ultimate nutrition, is beneficial. In the more acute forms of metritis, especially the septic, and in certain cases of subinvolution, continuous rest in bed is very necessary; here massage will keep up the general nutrition and muscular strength. Electricity, too—general faradization and galvanization—are minor aids which may be employed in

those severer cases in which the nutritive and nervous systems are involved to a considerable degree.

In regard to the use of remedies given to act on the general organization, primarily and indirectly upon the uterus, it must be confessed that we have none that specifically act on that organ excepting, perhaps, ergot and hydrastis canadensis. Ergot I have long ago abandoned. I rely upon hydrastis canadensis, which has some value in cases of subinvolution with endometritis and menorrhagia, wherein I have found that five or ten drops of it before meals and at bedtime appear to exercise a decided influence in lessening the hyperæmia. All other remedies, if they affect the uterus at all, do so by first favorably influencing the general nutrition. As a rule, restoratives are useful. Proper food, of course, is all-important, and as most cases are asthenic, they require a good nourishing diet. This should be largely a vegetable one, with fruit, milk, and, if indicated, the peptonized foods. When the general nutrition is fair I get better results by keeping them on a rather meager diet, with a little animal food not more than once a day, because a little food well digested is more conducive to normal nutrition in patients who are unable to take active exercise than the more easily digested and stimulating of foods, especially animal.

CHAPTER XXII.

DISEASES OF THE EXTERNAL GENITALS.

The great majority of the inflammatory diseases of the external organs of generation that come under the notice of the physician are produced by want of care in keeping the parts clean — constitutional diseases, such as the eruptive fevers, and specific and septic infection. Inflammation of these organs occurs at all ages, but varies in character at the different periods of life.

Young children are, of course, most exposed to the vulvitis of the eruptive fevers, and to that which occurs under tubercular conditions. In middle life the septic and specific varieties are most frequently seen. In the aged there are inflammatory affections of the vulva that are peculiar, and will be spoken of in connection with the diseases of old age.

It is evident, from the nature of the causation of these affections, that much can be done in the way of prevention, and this subject is, I believe, often neglected at all seasons of life and among all kinds and conditions of women.

In little children the genitals are either neglected altogether or bathed in such an imperfect and rough way that little benefit is derived—in fact, harm is often done. The proper way to bathe these parts is to take borax and water or soap and water, and let it flow from a fountain sponge over the surface, being careful to clean out all secretions in the folds of the mucous membrane and skin. Care should be taken not to have the fountain pressure too strong, or to throw the stream directly against the vulva. Inattention to

these points may permit the water to enter the vagina and carry with it offending matter.

The parts when cleansed should be dried with absorbent cotton pressed gently against the surfaces, avoiding all rubbing. Towels and sponges should never be employed. It is infinitely safer and more economical to use cotton and then throw it away. This attention to bathing should be given by nurse, mother, or attendant, until the girl is old enough to care properly for herself, which time is about the period of puberty.

The prepuce should always receive attention. It is as often adherent in girls as in boys, and the evil effects as pronounced in one case as in the other. The physician should see that any such defects or lesions are overcome, and adhesions separated. This is all that is necessary to relieve the irritation that is generally caused by them, and it also makes cleanliness possible. In middle life the same bathing should be employed, particularly after menstruation. In those who are subject to a free secretion of the glands of the vulva—especially if such secretion is irritating and offensive—frequent ablutions are necessary.

Much might be said in regard to those unfortunate wives who are obliged to live with diseased men, but I may briefly say that a vaginal douche and thorough bathing of the vulva before and after exposure to contagion will do much toward prevention.

Vulvitis.—In the cases that have come under my observation the inflammation of the vulva has been secondary to and caused by some pre-existing affection, except the vulvitis of children and the specific forms.

Uncomplicated vulvitis—nonspecific—may occur in several ways—as a simple erythema, a purulent inflammation, or as a follicular inflammation. The erythematous variety is characterized by a general redness of the vulva, limited to the mucous surfaces, though sometimes it extends to the skin. It is usually transient, occasionally passing away without much treatment. The purulent form is more defined. The

parts are red and covered with a copious formation of pus, and the epithelium rapidly exfoliates, leaving a raw-looking surface. Occasionally small patches of ulceration are to be seen, but these, as a rule, are neither large nor deep.

In follicular vulvitis the mucous membrane generally is not changed in appearance ; sometimes it has a deeper color, but the whole surface is studded with small red points which, on close investigation, are found to be the orifices of mucous follicles ; the size and number of these inflamed spots vary in different cases. This form occurs most frequently in aged women. In this and in the purulent form the discharge is increased by a free secretion from the mucous and sebaceous glands, and this gives rise to a very disagreeable odor. There is also in most cases considerable pruritus.

Causation.—Evidently the strumous diathesis and the lymphatic temperament predispose to it. All the cases which I have seen, that could not be traced to some pre-existing or specific cause, have been in strumous or phlegmatic women and children. The exciting causes are want of cleanliness, septic and specific infection, and constitutional diseases, such as the eruptive fevers ; dysentery, ascarides, and erythema intertrigo are occasional causes. Age also has its influence. The purulent variety occurs in children, while the follicular form occurs most frequently in the aged.

Symptomatology.—The symptoms are suggestive only, not diagnostic. The discharge, heat, tenderness, and pruritus are the chief symptoms, but they all recur when the vulvitis is associated with vaginitis, and similar phenomena are noted in many of the eruptive diseases of the vulva.

Physical Signs.—These are the same as those presented by inflammation of mucous membranes generally, and hence need not be given here.

Diagnosis.—This is made by inspection and a careful exclusion of all other affections, such as vaginitis, eruptive, specific, or malignant disease. To determine whether the vagina is involved or not is important, but in children rather difficult. Inspection shows whether the inflammation extends

above the hymen; and that, and the extreme quantity of the discharge, may suggest vaginitis. More definite evidence is obtained by washing the vulva clean and applying cotton at the introitus which will catch and show the discharge from the vagina, if there is any.

Treatment.—The chief objects in the management of vulvitis are to keep the parts clean and to separate the inflamed surfaces. This is difficult to do in children, hence the complete relief of this affection in the young is not by any means easily effected.

In vulvitis of women I have of late years relied upon frequent washing with a solution of borax or boric acid, and then, after drying the parts, applying thoroughly a dry powder of subnitrate of bismuth, oxide of zinc, or iodoform dermatol. This method answers very well if the patient has a nurse who can carefully employ the treatment. Equally good results have been obtained by applying to the parts, after bathing thoroughly, either of the following solutions: sulphate of zinc four grains, fluid extract of hydrastis canadensis one ounce, and water three ounces; or nitrate of silver and water one ounce. After applying either of these lotions a small pledget of absorbent cotton should be placed between the labia, to keep the surfaces apart and to absorb the purulent discharge.

Vulvitis is most difficult to manage in little girls and young, unmarried women, but, with proper and persistent treatment correctly carried out, success may be positively assured; otherwise the disease is most obstinate. The parts should be thoroughly bathed and cleansed in the way described in the beginning of this article—three or four times in the twenty-four hours, and, after each cleansing, one to three grains of sulphate of zinc to the ounce of water should be applied, preferably with an atomizer. The parts are then dried, and absorbent cotton placed between the inflamed labia, in case the patient is old enough to permit it to remain. In children, in place of the cotton, I use dermatol or prepared chalk and bismuth, applied with McKesson and

Robbins's applicator. In the same way I use iodoform in fine powder, which is most effective, but objected to on account of its odor.

When there is extreme tenderness I use with the atomizer a two-per-cent solution of cocaine during the first day or two before each dressing or application of the zinc solution.

When, in children, the inflammation extends from the vulva to the vagina, the disease is difficult to manage. The treatment of the vulva ought to be the same, but vaginal douches should be used. After thoroughly washing the vulva, a soft-rubber catheter (Tiemann's velvet-eyed) should be attached to a fountain syringe and passed high up into the vagina, and a thorough douche of boiled water applied. After this, a mild (one grain to the ounce) solution of sulphate of zinc ought to be injected or instilled with the same syringe and before withdrawing the catheter. The patient has to be kept in bed, or at rest, and under the constant care of a competent nurse. There is so much tenderness that a mild solution of cocaine has to be applied to the vulva before using the vaginal injection.

It occasionally happens that vulvitis appears during scarlet fever, measles, and diphtheria, and although in the two former affections the inflammation is of the erythematous variety and passes off, it may become permanent—i. e., suppurative and persistent. The physician should carefully watch for the first indication of the affection, and promptly institute treatment. The results in neglected cases are often very disastrous.

The treatment already given answers all indications in the ordinary cases occurring in connection with non-malignant scarlatina and rubeola.

In diphtheria I have found the bichloride of mercury to be especially efficient. Years ago I had an experience which was profitable in this respect. I saw a case of puerperal sepsis in which there was a diphtheritic exudation on the cervix uteri and vulva. Carbolic acid was then a favorite germicide, and was freely used by the attending physician. The patient

died. Two years afterward I saw in the same house and room a patient in a similar condition, except that the diphtheria of the vulva was more prominent. The attending physician—not the one in charge of the former case—was using bichloride of mercury (one in two thousand) as a wash for the parts involved. The patient recovered. These cases were seen before the local use of mercurial salts in diphtheria was employed as successfully as it now is. These facts have persuaded me to use the bichloride in all diphtheritic and diphtheroid forms of vulvitis. One part in four thousand I prefer to a stronger solution, and I can safely use it oftener, which I do—at the outset of the treatment—about once an hour.

In cases due to rectitis, ascarides, and malignant or specific diseases of the uterus and vagina the treatment already given is employed in connection with the management of the primary affection causing the vulvitis.

Pruritus of the Vulva.—The name indicates that this is a symptom, not a disease, but it occurs occasionally when the cause can not be discovered, and hence it has long been customary to treat it as a distinct affection.

The pathology is exceedingly variable. In one case there is found a slight congestion, approaching an erythematous inflammation, due to some irritating discharge from the vagina, urethra, or endometrium. In another there is a condition which is like an eczema; this is produced by saccharine urine. In others it appears to be due to reflex nervous derangement caused by some rectal disease; and there still remain many cases which, in the absence of any apparent cause, are attributed to some purely nerve affection or local neurosis; and, lastly, there is a dry condition of the mucous membrane and skin, which appear pale in patches and covered with a coating of dead epithelium.

There are usually in this condition a number of superficial fissures, which are red, moist, and sensitive. It has been said that the latter condition is due to some parasite or pathogenic germ. This is very probable; but I regret to

say that I have not taken the time to verify or correct this statement.

Pruritus occurs in its most severe form about the menopause, especially that variety which is not definitely discovered to be due to any of the systemic or local diseases which are known to cause it. Although it is limited ordinarily to the vulva, it may extend to the lower portion of the vagina, anus, and integument adjoining the mucous membrane.

From certain observations that I have made, I believe that the true lesions in the severer cases (not otherwise accounted for) are degeneration of the capillary vessels and retardation of exfoliation of the old epithelium. While I have found these conditions present, I have not made microscopical examinations sufficient to demonstrate fully the change of structure, neither have I made bacterial investigations to prove the presence or absence of germs that might be causative factors.

Symptomatology.—The patient notices an itching of the parts affected, which is at first relieved by scratching or rubbing, but later this relief is but temporary, and the friction aggravates the original trouble. The tickling, sharp stinging and burning sensations become at times intolerable, and the patient is debarred from the society of her friends. In some instances the annoyance and suffering are increased at night, and in order to obtain sleep, hypnotics have to be administered.

Physical Signs.—The signs vary according to the cause of the irritation, and are described above in speaking of the pathology. In some cases there are no definite signs present. A due appreciation of these facts is necessary for the institution of proper treatment.

Causation.—The causes are many and varied, as has been foreshadowed by the remarks regarding pathology. Pruritus being only a symptom of many affections, one has only to mention the diseases with which it is associated to fill out the list of causes. This is far from being satisfactory, as it leaves the direct cause of the disease unexplained.

The possible causes (which may be known as certain diseases in the future, when better understood) are an undetermined parasite or germ and a malnutrition and degeneration of the capillary vessels such as I have specially referred to. Then come the diseases with which it most frequently occurs, diabetes standing first in the list. Saccharine urine surely causes pruritus of the parts with which it comes in contact, a fact worth remembering, because it is the most definite thing known about this subject. Next in order are all discharges from the vagina or urethra that are of an irritating nature. The discharges of vaginitis, corporeal endometritis, cancer of the uterus, and urethritis are said to be especially active in causative effect.

According to my observation, rectal diseases, such as fissure or ascarides, cause pruritus, but not of the severest order. Certain conditions or affections of the nerves, general or local, are inferred to cause this trouble, but I have not found anything definite upon the subject either in the works of others or in my own practice.

Treatment.—The first object in the management of pruritus is to cure the disease which promotes it; or, if that is impossible, to protect the vulva from the discharge, which is the offending agent. Discharges from the uterus or vagina can usually be arrested, except in cancer. In that affection when it causes a severe pruritus or vulvitis I use a vaginal douche of zinc or carbolic and acetic acid and place a tampon of cotton in the vulva and lower part of the vagina. This is often enough to keep the vulva protected from the discharge, and meantime such applications as are indicated should be made to the organ to cure the immediate irritation and relieve the pruritus.

In the treatment of the pruritus of diabetes I direct the patient to separate the labia while urinating, to keep the urine from touching them, and then to dry the meatus with cotton. The parts are still further protected from the urine by applying thoroughly to the vulva boric ointment (Lister's) or stearate of zinc. This manner of treatment gives most

satisfactory results in diabetic pruritus—as I call it—but the treatment must be faithfully and continuously employed.

Very satisfactory results can be obtained in treating cases where the pruritus is caused by some appreciable disease, general or local. The greatest difficulties are experienced in managing that form of pruritus which occurs without any lesion of structure or accompanying well-understood affections to account for it. In these cases, as already stated, the skin is bleached, in spots appearing whiter than the normal skin; it has also lost the normal elasticity, while to the touch it seems harder and less flexible.

Many of these cases prove to be incurable, and in some it is not possible to give the patient complete relief by any local treatment. This has led to the use of a great variety of agents, but none of them have proved to be at all times reliable.

The remedies that have given the best results in my practice are bichloride of mercury (one grain to the ounce) and emulsion of bitter almonds, to be applied to the parts affected two or three times a day; a powder of one grain of morphine to two grains of chalk applied night and morning; equal parts of tincture of opium, iodine, and aconite, and eight per cent of carbolic acid applied once a day. All these have been tried and have proved serviceable to some extent, but there are cases which resist all these remedies.

The bichloride of mercury, used alone, has been of the most service in the largest number of cases. Where it fails I have used a solution of iodoform in ether, applied by means of an atomizer, and by using strong air pressure the solution is forced into all the folds of the mucous membrane. The ether soon evaporates and leaves a fine coating of the iodoform over the whole surface. This nearly always relieves, and if applied frequently is curative in some cases.

I have also used carbolic acid and tincture of iodine, equal parts, and this nearly always gives relief for a day or more. In the following case this application relieved the pruritus permanently:

The patient had passed the menopause, and, although she had not borne children, her health had always been good. Dr. Fordyce Barker, whom she consulted, sent her to me, telling her at the same time that I could not cure her, but would give her as much relief as possible. I tried the usual remedies, with no benefit; then used the carbolic acid and iodine, but found it difficult to apply to all the irregularities of the surface. It was applied with the atomizer, using a high pressure so that the solution was forced into the tissues, and a deeper effect obtained than I had expected. The first effect was sharp pain, followed very soon by relief from the itching and numbness of the parts; in short, the anæsthetic effect of the carbolic acid was obtained in a marked degree. Following this there were great irritation and pain; the epithelial layers of the skin and mucous membrane came off as if they had been blistered, and there was much sensitiveness. But even when in the most pain the patient said she suffered far less than from the itching. When she recovered from the treatment the tickling sensation did not return for several weeks, and then only in a slight degree. I made the same application once again to several spots where there was severe itching, being careful not to cover more than a very small area. It was not necessary to apply the remedy a third time. She completely recovered and remained well for one year at least, and I presume had no relapse, as I heard no more from her.

Electricity has been used in all forms of this affection, but without much benefit being derived from it as far as I know.

When the vulva is involved in a general pruritus caused by hepatic disease and jaundice, nitric acid or hydrochloric acid (one ounce in thirty or forty gallons of water), used as a general bath, is valuable. To relieve the suffering, especially at night, cocaine and menthol, benzoinole and menthol, morphine and bismuth—used in powder—and dermatol, have all been found useful, but the benefit is temporary.

Bathing with hot water and borax does well in some cases. Salicylic acid, five parts, lanolin, ninety-five parts, make a

useful ointment. Scanzoni recommended chloroform ʒ ij, olei amygdale ℥ ij. Chloral hydrate, camphoræ, āā ʒ ss., and ungt. aquæ rosæ ℥ ij, is a most valuable application when it does not cause smarting.

Finally, I have used ichthyol, gr. xx, to lanolin, ℥ ij, which has in some cases a curative as well as a quieting effect. The reason for giving so many remedies is, that by trying a number, one may be of service in certain cases even if useless in others. In this disease the old saying that what helps one may hurt another—or at least not benefit—proves true.

Hyperæsthesia of the Vulva.—This affection is most frequently seen among young married, sterile women, and after the menopause. It has been known by the name of irritable hymen; but the hymen is not always the part involved. In fact, there are two forms that I have seen. In the one there is a general tenderness about the vulva without any appearances to indicate disease or change of structure; the other is characterized by a slight thickening of the hymen and proliferation of the epithelium, which give a pale, papillary, ragged appearance to the margin of the hymen. In the latter variety the hymen is alone involved.

When seen at the menopause the disease presents no change of structure as far as one can judge from appearances, and should be clearly distinguished from vaginismus and the tenderness which is caused by inflammatory affections, especially neoplasms of the meatus urinarius. It is characterized by a supersensitiveness of the parts, shown by extreme tenderness to the touch. Patients sometimes delay seeking advice, from dread of an examination. Pain is not often present, only tenderness, which is the only symptom noticed in bathing and wearing a protector during menstruation, and in dyspareunia.

The diagnosis is made by excluding all inflammatory affections, scar-tissue, and diseases of the rectum, such as fissure which is sometimes attended by tenderness of the vulva.

Causation.—Nervous women may be predisposed to this affection, but I have only seen one case in which the local trouble appeared to be a part of a general neurotic state or general hyperæsthesia. Marriage with incomplete coitus appears to be the cause in many; masturbation may also cause it, but of this I am not sure. At the menopause it appears to be due to an irregular atrophy or degeneration and malnutrition of the nerve and other tissues.

Treatment.—When the hymen is present and there is hyperplasia as referred to, the treatment consists in the removal of the peculiar and especially tender tissue. The reader is referred to works on surgery for a discussion of this subject. The medical treatment which is indicated, and which gives relief in most cases, consists in temporarily relieving the tenderness by the use of cocaine—a two-per-cent solution applied with the atomizer, or by saturating a piece of cotton; the latter method keeps up the effect longer. Menthol and benzoinol is of marked value in the cases that occur at the menopause when there is dryness as well as tenderness of the mucous membrane. The use of cocaine often relieves the dyspareunia; and if gestation takes place the tenderness is partly relieved, and disappears entirely after confinement. Boroglyceride or tannic acid and glycerin are of use in some cases. A few applications of nitrate of silver (one grain to the ounce) are helpful.

In case there is a free secretion of the vulvo-vaginal glands, applications of bichloride of mercury—one in two thousand—should be tried. In some obstinate cases I have used carbolic acid, one part in twenty parts of glycerin. Debilitated and weak-nerved patients require constitutional treatment, and I need not add that the causes—if any can be detected—should be removed. Physiological means must also come in as a part of the treatment.

Varicose Veins of the Vulva.—The veins about the vulva, like those in other portions of the body, may become varicose. This commonly occurs in those who have borne children; indeed, pregnancy appears to stand in a causative re-

lation thereto, although cases undoubtedly do occur in those who have never been pregnant.

Causation.—I am satisfied that certain defects in the structure of the veins—and in fact in the circulatory system generally—predispose to this affection. Defects in the elastic tissue, which leave the skin unsupported, I think may be a cause.

Anything which obstructs the nervous circulation will, by increasing the intravenous pressure, tend to produce this varicose condition, whether it be a pregnant uterus, a tumor, or, as mentioned by Winckel, the straining at stool in case of obstinate constipation. Those who stand day after day, such as saleswomen, or sit all day, as typewriters and seamstresses do, are likely to suffer from this affection.

Symptomatology.—A patient may have well-marked varicose veins of the vulva and yet be entirely unaware of the fact; or a sense of heat and irritation may be experienced of so disagreeable a nature as to cause her to consult a physician, when the presence of varicose veins may be recognized. In still other cases the fullness due to the swelling is so great as to attract attention, though other symptoms may be absent.

Physical Signs.—Upon examination, in slight cases, the varicose condition of the veins is observed. In more aggravated cases, however, there may be so much tumefaction of the labia and other parts as to mask this peculiar condition of the veins. Holden describes a case in which a tumor existed as large as the head of a child. The diagnosis in these cases is to be made by excluding the other affections by methods which are elsewhere described.

Treatment.—Little can be done in the way of radical treatment for this condition short of surgical operations; but the physician can do much to relieve, and, in cases seen early enough, even entirely cure. The bowels should be attended to, so that there may not be constipation and the accompanying straining at stool.

The patient should rest as much as possible in the reclin-

ing position with the pelvis elevated—in other words, take the postural treatment recommended in the treatment of varicose veins of the broad ligaments. Local cold-water bathing and sea bathing are very beneficial, and astringent washes, to give tone to the skin and restore support to the veins, are also useful.

If the varicosity is marked and shows a tendency to increase, some relief may be obtained by a pad so applied as to give the veins the support which they lack by reason of the weakness of their walls. It should be constantly borne in mind that when these veins assume a marked varicose condition, there is a possibility of their becoming so distended during pregnancy as to rupture at the time of delivery.

Vaginitis.—Much that has been said regarding vulvitis, considered from the standpoint of the physician, applies with equal pertinence to vaginitis. It must be conceded, however, that vaginitis, being often a secondary affection, requires surgical care. Nevertheless, there are many patients with vaginitis who come under the care of the physician, and can be successfully treated by medical management alone. The physician should be prepared to make a diagnosis and to institute appropriate treatment in order to help those who do not or will not place themselves under the care of a surgeon. He should know the limit of his ability to manage the disease, so that he may transfer cases where medical care is incompetent. How to differentiate in this respect will be pointed out hereafter.

I am the more desirous of making this subject plain to the general practitioner owing to the fact that many times patients apply to their family physician for relief from a vaginitis, and, failing to get proper medical care, drift to other secondary diseases which are difficult to cure by surgical treatment.

The vagina is seldom affected with idiopathic inflammation ; vaginitis, therefore, occurs as the result of some specific cause, or is secondary to inflammation of some other organ, such as endometritis. There are several varieties of vaginitis. Classified according to the intensity and duration of the

affection, there are the acute and chronic forms; when classified according to the causation, there are a number of forms, the most important of which are gonorrhœal, erythematous—sometimes called erysipelatous—and diphtheritic. As a rule, the inflammation is general, involving the whole canal; occasionally it is circumscribed, and then it is found just within the vulva, or else at the upper part.

Pathology.—Owing to the anatomical peculiarities of the vagina, it is not fully susceptible of the catarrhal form of inflammation so common to mucous membranes elsewhere. From the fact that the vaginal mucous membrane resembles in structure the skin, and that there are few mucous follicles found in it, vaginitis in its pathology is more like dermatitis than like the ordinary inflammation of mucous membranes.

Congestion, transudation of serum, premature exfoliation of the epithelium, and, in well-defined cases, the formation of pus, are the characteristic results of acute vaginitis. In the subacute form there is less congestion and less pus; otherwise the inflammatory lesions are the same. This may be briefly stated as follows: Vaginitis occurs either as erythematous, purulent, or exudative; never as purely and well-defined catarrhal.

The morbid appearances in these forms differ. Erythematous vaginitis is characterized by great capillary congestion, which gives the intense redness of the first stage of this form of inflammation. Then, as the disease advances, there is exfoliation of the epithelium. Sometimes it comes off in thin flakes, resembling in this respect the exfoliation of the cuticle in dermatitis. This leaves the mucous membrane denuded of its epithelium, and gives a glazed appearance to the whole canal. During this time there may be a free serous secretion and some pus found, but these are not profuse in all cases.

In purulent vaginitis the lesions are the same as already described. In the exudative forms the characteristic lesions are present—the diphtheritic membrane in diphtheria, the croupous in that form of inflammation. There are other forms of vaginitis mentioned by some authors, but they are

peculiar in regard to causation, while in their pathology they do not differ materially from those described.

Symptomatology.—The symptoms in the acute form are a sense of internal heat and fullness. These increase in intensity, and pain in the vagina and uterus comes on. Vesical and rectal tenesmus are present in severe cases, and urination and defecation may be somewhat painful. The urine causes violent smarting of the inflamed parts about the vulva with which it comes in contact. So severe is the pain in some cases during and after urination that the patient resists the inclination until the power of evacuation is lost and there is retention.

There are also constitutional disturbances. At first there is slight fever, and, following that, loss of appetite and debility. The discharge is profuse and sero-purulent in character, and it causes excoriation of the external parts, which often extends to the limbs. If strict cleanliness is not observed, the discharge decomposes and causes a very disagreeable odor. Some one stated that the discharge in vaginitis had an alkaline reaction which was diagnostic, because the normal secretion of the vagina is acid, and the change is evidence of inflammation. I have not been able to verify the statement. In the subacute and chronic forms of vaginitis the symptoms are the same in character but less in degree. In fact, the annoying discharge is the only symptom observed in many of these mild cases.

Physical Signs.—By inspection of the parts when the labia are separated, the characteristic discharge can be seen and recognized. It differs from that of vulvitis in being less tenacious. The mucous glands about the vulva give to the discharge of vulvitis a cohesiveness which is not found in that of vaginitis. The use of a speculum will show the inflamed appearance of the membrane and the discharge which is present.

The anterior and lateral portions only of the walls of the vagina are seen through the Sims speculum, but by watching the folding together of the posterior and anterior walls,

as the speculum is withdrawn, the whole canal can be thoroughly inspected. It is seldom that the physician requires to use a speculum.

The difference between the signs of acute and subacute inflammation is simply in the intensity of the congestion, the extent of the canal involved, and the quantity and character of the discharge. To distinguish gonorrhœal vaginitis from the nonspecific forms the microscope alone is sufficient. When there is a question regarding the nature or the cause, specimens of the discharge should be examined for the gonococci.

Causation.—There is a predisposition to vaginitis in those of delicate health and strumous diathesis, but it is not marked. Judging from my own observations, the common causes of vaginitis are gonorrhœal virus, vulvitis, metritis—especially puerperal—erythematous affections, subinvolution menstrualis, and habits of personal uncleanliness, physical and moral, the latter too well known by physicians to need more than mention.

Subacute and chronic vaginitis may be caused by any inflammation in the neighborhood of the canal. Dysentery, for example, not infrequently causes vaginitis, and pathogenic germs have been credited with producing it, but this is not completely verified. When it occurs in connection with the eruptive diseases, the cause is, of course, the specific morbid material which produces the constitutional disease.

Prognosis.—With proper care vaginitis can be arrested and recovery secured without any permanent lesions. It is liable to recur if caused by gonorrhœa. Sometimes permanent damage is done to the canal when the vaginitis is due to any of the eruptive diseases or diphtheria.

Treatment.—In the past, treatment of vaginitis has consisted mainly in the frequent use of medicinal douches. The agents used, and the means and ways of using them, have varied greatly with different practitioners. Very recently a new method of treatment has been brought to the notice of the profession by Dr. Engelmann, of St. Louis. He terms

his method the dry treatment, which consists in the use of medicinal powders and medicated tampons.

A number of years ago I tried this method, in an imperfect and limited way, in the treatment of vaginitis among the insane, and obtained experience enough to know that it is of great value. I find, however, that while using certain agents in powdered form, and also the tampon, the discharge from the inflammation and the powder lodge in the folds of the mucous membrane, and it is necessary to use a vaginal douche occasionally in order to make the treatment effective.

In acute vaginitis I employ what may be called a mixed treatment, using the medicinal agents and powder with tampon, and occasionally employing the douche in the following way: After cleansing the mucous membrane thoroughly with a douche of warm water and borax—a drachm to the quart—I then apply subnitrate of bismuth and prepared chalk, equal parts, and introduce a tampon of borated cotton, the tampon being so arranged as to thoroughly keep the vaginal walls apart. At the end of twelve hours the tampon is removed, and any accumulation of the discharge and powder is completely washed away with a douche and the tampon replaced. At the end of the next twelve hours the tampon is removed, the douche of borax and water employed, and the powdering repeated. The powder is applied with a very useful, ingenious applicator made by McKesson and Robbins.

In acute cases, where there is much pain, and especially if due to a specific cause, I use iodoform in place of the bismuth. If the trouble does not yield promptly to this treatment, I give up the dry dressing, and every third day apply to the entire canal, by means of the atomizer with strong pressure, a solution of nitrate of silver, one grain to the ounce, or sulphate of zinc, one half grain to the ounce. I find that such mild solutions, applied with considerable force with the atomizer, so as to diffuse the application thoroughly, produce a far more marked effect than much stronger solutions used as a douche.

The method of application or spraying the canal is as

follows : A Sims speculum is introduced, and when the canal is distended by pressure, the spray is thoroughly applied to the upper portion of the canal and to the anterior and lateral walls, and the posterior wall is sprayed as the speculum is gradually withdrawn. In the intervening days between these applications I employ once or twice a day a vaginal douche of a solution of sulphate of zinc, sixty grains to the quart of warm water.

In cases that can not be so carefully watched and treated I rely almost wholly upon the sulphate-of-zinc solution, used as a vaginal douche, two or three times a day at first, and subsequently once a day. This answers remarkably well in a great majority of cases, but there is a constant liability to miss a portion of the canal, especially the upper and posterior fornix. To overcome this, an application of the nitrate of silver or sulphate of zinc is to be made to these neglected parts once or twice a week through the speculum.

This simple treatment is usually sufficient in all ordinary cases, but whenever the disease is specific in its origin and is complicated with urethritis and endometritis, then these affections should be treated simultaneously in the ordinary way by the surgeon. The general health should be looked after carefully and any derangement or defect corrected. I have admitted treatment that might more properly be given under a surgical care of the case, but it is of such a minor order that most physicians are competent to employ it.

CHAPTER XXIII.

FUNCTIONAL DISEASES OF THE NERVOUS SYSTEM ASSOCIATED WITH DISEASES OF THE SEXUAL ORGANS.

The nerve element in diseases of women is a potent factor in both the cause and the cure of their manifold maladies. Living on their nerves, passions, and prejudices, the reaction must be conducive to nerve misrule. The brain and spinal cord lose their control over their subordinates. The nervous wear shows itself very frequently by distinct pelvic symptoms, prominent among which are a bearing-down feeling, backache, scanty, painful, delayed, or suppressed menstruation, irritable bladder, and ovarian pain, usually on the left side. True, skin affections, neuralgia, insomnia, and general bodily weariness may accompany these other marked symptoms, yet the patient—and chiefly her friends—will direct all their attention toward this "womb trouble."

Oftentimes the physician discovers some slight malposition of the uterus or some insignificant catarrhal lesion, and these might be magnified into certain causes of a condition, that a broader observer would at once recognize as mere waste, or nerve exhaustion. A headache does not mean brain disease; then why should backache mean uterine disease, or ovarian neuralgia become a reason for thinking of ovariotomy?

The condition that I have described—this weariness or jaded, nervous state—is not neurasthenia, nor is it necessarily associated with disease of the sexual organs; but I have often found functional disturbances of the mind most difficult to classify which were directly dependent upon diseases of the sexual organs. The disturbances under consideration most

frequently appear as exaggerations of what we call "disposition." We speak of a good or bad disposition or "temper," meaning thereby the usual way of looking at things and behaving toward others.

First among the functional disturbances associated with diseases of the sexual organs comes a morbid irritability, showing itself in continual fault-finding concerning their environment. Whatever is, is wrong. They are dissatisfied, complain continually, lose their mental equilibrium on the slightest provocation, and become known as exceedingly ill-natured. Young girls who are "spoiled" are particularly liable to attain this condition, which shows itself on the slightest indisposition or moment of ill-health. But we may see all this in older subjects and in some unmarried ladies of uncertain age who exhibit this ill-temper, especially if they have been disappointed.

Married, sterile women are also subject to this form of disturbance; they are apt to be imperious and dictatorial. It is difficult to tell whether this is the natural disposition, or whether it is an acquired state due to morbid mental irritability. The diagnosis is, of course, easily made in case the physician has known the patient before this mental irritability manifested itself.

Another form of disturbed mental function of an entirely opposite character is mental depression, not anything like a true hypochondria, but rather a lack of confidence, with disposition to be hypercritical. While one is apt to be quarrelsome and fault-finding toward the attending physician, another is apologetic and traces all her misfortunes to herself, and is emotional in a quiet way without being able to give the slightest reason for the tears that come without any apparent exciting cause.

These merely hint at an outline of the two directly opposite conditions of mentality—temper or disposition. Between them all varieties are to be found, and the reason why they should be referred to here is that the gynecologist of necessity is obliged to note such things in the general management

of cases under observation. They are of most interest from the standpoint of the therapeutist, for the physician must take into account the peculiarities of disposition of each case in order that he may secure the full confidence of, and do the most toward restoring, each individual to health who may come under his care.

The treatment, of course, must be psychological—that is to say, the medical attendant's tact and ability to control patients and compel them to submit to his will and wishes are the chief therapeutic agents. To control and direct such patients mentally is the means through which benefit can be secured. Perhaps it might be well to classify these agencies under the head of hypnotism, and indeed this control of the minds of patients by the medical attendant is allied to it, in my opinion. Some are greatly gifted with the power of securing the confidence of patients and controlling them mentally, and certainly it is a power that should be studied as thoroughly as the tangible remedies of materia medica.

The irritable or ill-natured should be mildly and gently but effectively repressed, while the timid and depressed require to be cheered and sustained. This management of patients is often called tact, which simply means knowing how to control the mind as well as the body in the use of therapeutics. Too often the doctor of medicine leaves this to friends, attendants, or to the spiritual adviser, but I have seldom found such care-takers well qualified; friends usually aggravate rather than relieve. The doctors of divinity, too, are sometimes lacking in tact, and exercise poor judgment, cheering and encouraging those who should be condemned and chastened, while dwelling upon the sorrows, sins, and iniquities of those who are timid, innocent, and require to be freed from their apprehensions of wrongdoing.

This field of "suggestive therapeutics"—hypnotism, influence, call it what you will—is not only unexplored, but it is a domain that the conservative are prone to look askance at, for fear "spiritualist" or "mesmerist" may be lightly at-

tached to their titles. The fear is all too well grounded; the ignorant—i. e., most people—class all this moral part of therapeutics together under the head of fraud.

But suggestive therapeutics, although a *fin-de-siècle* product, is here to stay, to grow. It has fallen into the hands of some cunning, smart, bad men thus far; but when the medical profession shall calmly and without prejudice study it experimentally, practically, its results in some cases—for it is a mistake to imagine suggestion can be equally strong to all—will be beyond all that is even now claimed for this "cure." The great Charcot probably first gave this school its impetus, and to the French we owe much of the advance and investigation in this line of new work.

Nervous Oppression.—Nervous oppression is a condition of the nervous system in which there is an apparent, but by no means real, asthenia or exhaustion. It is as if the nervous system acted under unfavorable conditions of nutrition, and hence became functionally perverted to a marked degree. This affection is very common—nearly as common as neurasthenia or nervous exhaustion; but I am confident that it is not at all understood, in fact is frequently mistaken for a neurasthenia or nervous exhaustion—an entirely different condition.

Here is the proper place to discuss this subject, so that it may not afterwards be confounded with neurasthenia, an affection bearing a striking resemblance to it, but one in many ways different. The one is a purely functional derangement, while in neurasthenia there is a continuous abnormal alteration of circulation.

I have often seen patients treated for nervous exhaustion and made very much worse by this treatment when they were simply suffering from nervous oppression. While this condition is uncomplicated, there is no anæmia or malnutrition to account for the nervous debility. The nutrient supply to the nervous system seems to be ample—in fact, in some cases excessive—many patients becoming plethoric and fleshy.

This is really an acute condition tending toward recovery with proper treatment, or at times merging into neurasthenia, although it is by no means to be regarded as a first stage of neurasthenia. Imperfect disintegration and elimination give rise to imperfect nerve nutrition, should the condition persist; hence one often sees this transformation of diseases.

Symptoms.—The most prominent symptom is general weakness, clearly traceable to the nervous system. The patient is easily fatigued by mental or physical exertion, and there is decided torpor of mind. An effort to do anything in the way of mental labor is extremely irksome, difficult, and a great trial for the patient, and one that is not usually attended with success. Any strong impression or shock to the nervous system is liable to produce a faintness, sometimes actual fainting, with this peculiarity: that the patient faints with a flushed face and seldom entirely loses consciousness; it is more a slight bewilderment and simulates syncope. Headache is often present, and the patients usually wake with it in the morning, the pain not being acute or neuralgic, but more akin to that of deranged circulation either from hyperæmia of the brain or from some semitoxic condition of the blood itself.

These patients are often good sleepers, although frequently disturbed by dreams like anæmic patients, with this difference: that the dreams are more like nightmares. They are apt also to have pain in the back of the neck with backache. On taking muscular exercise they become very easily fatigued and short of breath. This want of muscular strength and short breathing are clearly due to nervous depression because the muscular system is not at all deficient. They usually have flesh enough, although it may be somewhat soft for want of exercise. The appetite is generally good; not infrequently there is constipation; the complexion is somewhat dusky; the tongue is coated, but not always; the urine is generally high-colored or muddy; menstruation is frequently deranged, being delayed or scanty or both; and there may be some leucorrhœa even in those who are other-

wise free from uterine disease. In a word, there is a condition that is best expressed as excrementitious plethora. Ultimate nutrition, disintegration, and elimination are all abnormal. This condition is allied to lithæmia, and, from the description of lithæmia and the uric-acid diathesis usually found in books, I am inclined to think that they are very much of the same order. I prefer the term excrementitious plethora, as indicating the condition I have just described.

Causation.—The most potent cause is inactivity of body and mind, with general good living. Sometimes this overfeeding and inactivity result from the social position and tendency to indolence; quite frequently, however, the idleness is enforced because of some uterine disease, inflammatory or in the form of a displacement which causes suffering should the patient take sufficient exercise. Some of the most distinctive cases that I have seen arose from suddenly induced amenorrhœa, and suspension from sexual indulgence leads to the same state of affairs. Alienists have observed that young widows are predisposed to insanity, and I believe it to be in great measure due to nervous oppression following sudden cessation of sexual indulgence. I might say, then, in brief, that inactivity, voluntary or compulsory, with general nutrition good, are conditions tending to produce this ailment. There is, no doubt, in many a predisposition to this state arising from natural peculiarities of organization, such as in those who have good primary digestion and assimilation but a sluggish disintegration and elimination.

Treatment.—I was first led to consider this affection a nervous oppression pure and simple from the fact that the nervous debility, or brain and nerve torpor and apparent debility, entirely disappeared under extraordinary exertion. I have often seen patients who have long been known as weak and inefficient in every respect, become strong when some extreme responsibility was thrown upon them, such as sickness or poverty, which compelled extraordinary exertion. They really lost their aches and pains in consequence of what was to them decided overwork. This same thing has been noticed

when some pleasurable excitement occurred. A young lady, weak and debilitated, becoming interested in one of the opposite sex, gradually overcomes her weakness and does most wonderful things, for her, in the way of mental and physical exertion.

These observations not only lead to a clear conception of the pathology or nature of this affection, but also suggest in part the line of treatment—namely, well-regulated or systematic mental and physical exercise, gradually increased in severity. We must secure occupations equally divided between body and mind, at first of the lightest character, and gradually increased, especially exercise in the open air, and a reasonable amount of plain, wholesome food, rather less than exceeding the patient's demands. In addition to this, induce free elimination from the bowels and kidneys. I have found the most difficulty in getting the kidneys to do their duty in those cases, but, as soon as I have succeeded, improvement has been great. Free catharsis at the commencement, following mild doses of mercury, will generally start the bowels, and kidneys also, and then the mineral diuretics and stimulating laxatives will keep up the normal action. Such cases very often do remarkably well; in fact, they are the patients that, in my opinion, profit the most by the use of waters at the resorts such as Saratoga and Carlsbad.

I am here prompted to add what things should not be taken in this class of cases, because I have so often seen great harm done, and the affection continued indefinitely, by mistaken diagnosis, and consequent improper treatment. I have again and again seen patients, who complained of weakness which could not be accounted for by anything but nervous debility, submit to Weir Mitchell's rest cure and forced feeding, and I know of nothing worse that could be done in such cases, as results invariably have shown. Many of them crave stimulants because they give marked momentary relief, but they are in all cases made much worse by them; the same is true of tonics. The rest cure, while a very important therapeutic agency in certain cases, as will be seen by

and by, is most pernicious in cases of nervous oppression. Instead of the rest cure then, I would recommend the "occupation" or "exercise" cure, meaning by this not passive exercise, such as is obtained by massage, or the Swedish-movement cure, but actual exercise, mental and physical, by the patient herself.

Introspection.—The term introspection is here used to indicate the habit of thinking about one's body and its functions. It is a critical and almost continuous investigation carried on by the mind regarding the body. Considerable thinking about self is necessary in order to supply the bodily wants; but that does not require one to think of the body and the functions which it performs. The human mind is largely occupied in securing the everyday wants of life. The large majority of the higher intellectual faculties are exercised in bringing one into harmonious relations with the world around in order to maintain life and partake of the higher mental enjoyments, as well as of daily bread. To think and labor diligently to live and enjoy life, is the normal exercise of the mental faculties. But when the wants are supplied, food will be digested and assimilated without any thought or care. The heart will continue its pulsations without being watched, and the lungs will keep up respiration without a thought being given as to how they are breathing.

To divert the attention to the organic functions is really a perversion of mind function, and while it is a useless exercise of thought, it also influences the organic functions in a morbid way. To this abnormal affection of the mind I have applied the term introspection. The natural history of introspection is usually as follows: The patient first discovers, or is taught, that certain organs and tissues of the body exist, and that they have very important functions to perform (Mental Education of Girls). The attention is directed to these organic functions and the duties they perform, and the subject becomes an interesting study to the idle and half-educated, and is naturally kept up. It will soon be discovered that there are certain sensations or symptoms developed

by the action of certain organs, and if closely watched these sensations will be, at times, disagreeable. This attracts further attention and gives additional interest, and so the practice is continued with increasing industry.

The result is that the organic functions soon become deranged, first from the disturbing influence of the mind, and then from the depression which comes from unnatural occupation. There are few hearts that will beat regularly if they are watched continually. It may be that a little irregularity of the heart action is common to every one; or it may be that if the attention be concentrated upon the heart, its action will become deranged through perverted nerve action. Certain it is that those who keep a systematic watch over the action of their own hearts are sure to report frequent irregularities on the part of that organ. It is the same with the stomach. That useful and patient organ will overcome many trials of life if left to itself and not too carefully looked after. In a more marked degree still will the sexual organs become perverted if the mind is permitted to dwell upon them. When once this deranged function of any of the important organs of nutrition and reproduction has begun it is likely to increase until a fixed and continuous morbid condition is produced, and it is more than possible that long-continued derangement of function may lead to organic disease. Beyond doubt the presence of a functional disorder predisposes to organic disease which will become developed under exciting causes and would not be operative in one of sound health.

Causation.—The causes which produce introspection are to be found in the overdevelopment or supersensitiveness which may be inherited or acquired, perhaps both. In this age there is a marked tendency to the development of the brain and nervous system, not so much in the way of increase in quality, as in their higher tension, sensitiveness, or excitability. A nervous system which is highly sensitive responds to every impression promptly and emphatically. Every pain is acute, every discomfort is keenly felt, and hence the attention of the mind is frequently called to the

wants of the body. These conditions are no doubt the great factors in predisposing to introspection, so far as the mental and physical conditions of men and women are concerned at the present day. Perhaps these conditions are more prevalent in this country than elsewhere. People who have been poor quite frequently become rich, and, while freed from the necessity of making great efforts to live, they have not by education and habit acquired the faculty of continuous normal occupation. Many such have but little interest in public matters, and not sufficient regard for art, science, or literature to occupy their time; hence they naturally turn to social pleasures, which, though to a certain extent wholesome, are demoralizing if one's whole life is given to them. In this regard the poor are often better off than the rich. The constant occupation of the poor, which raises the mind above the petty discomforts of life, contributes largely to maintain the harmony of action between the nervous and the nutritive systems.

Certain errors in the methods or principles of home and school education, already referred to, are peculiarly baneful in their results.

Treatment.—The great object should be to guard against the establishment of the habit of introspection. This prevention is in this connection, as it always is, far more important than cure. The surest way to prevent is to carefully study the causes of this trouble, outlined above, and then to carefully guard against them. In a word, it may be stated that the mind should be continually occupied with interesting subjects outside of self. Never should the child or girl be allowed to make her own body the subject of study. There are things that some people should not know.

When introspection has been cultivated until it has become a fixed habit or affection, the most careful and prolonged treatment is necessary to eradicate it. Indeed, it is often incurable, especially if the subject is past the age of twenty or twenty-five. I have occasionally seen recovery take place in well-marked cases by a change from the par-

ental home to the cares and duties of married life. A girl thoroughly spoiled by her parents, until she thinks of little else but herself, may become interested in some one else. Once happily married, she may have new interests and duties thrust upon her which may teach her to forget self in her devotion to others. If this is not the case, then the physician may give relief by instituting a systematic course of treatment which has constant occupation for its basis. Traveling with a competent companion or in a party with wholesome minds will often do well. If that is not practicable, systematic exercise, mental and physical, with recreations, amusements, bathing, and careful diet, all so arranged as to occupy the time, is the general method of management to be recommended.

This subject is closely related to "The Invalid Habit," and the chapter on that topic may be referred to for further facts regarding the treatment of introspection.

CHAPTER XXIV.

HYSTERIA.

The term hysteria is applied to an extraordinary variety of functional disturbances of the cerebro-spinal and sympathetic nervous systems. These derangements of nerve functions arise primarily from defective and inharmonious development and imperfect training. The deranged functional action of the nervous system develops functional disorders of the nutritive and motor systems, in almost endless variety and character.

In order to comprehend the nature of hysterical affections and their diverse manifestations, it is necessary to understand the peculiarities of the character of the organization, which I call the hysterical personality or constitution. This implies a peculiar kind of type or character of brain and nervous system, which differs from the neurotic, the epileptic, and the criminal brain.

Without knowing much of the characteristic anatomy of the brain and nervous system of the hysterical subject, there are certain manifestations which can be comprehended. There is, first, defective will power, so constantly present that it indicates an imperfect development in that portion of the brain which supplies will power and cerebral co-ordination. There is, relatively, a high development of the emotional brain element, and I presume that, in consequence of these conditions, there is an extreme susceptibility to external impressions. Whatever the cause may be, there is this inability on the part of the hysterical personality to adapt herself to the environments. In referring to the characteristics of sex

given in the beginning of this work, it will be found that women naturally have the peculiarities of organization which predispose to hysterical outbreaks, and this is confirmed by the fact that hysteria is peculiar to women. The fact that it has occasionally been found in male subjects should not count, because it only occurs in those who are of feminine constitution.

Pathology.—Hysteria has no morbid anatomy; at least none has been discovered. Still, the pathology of hysteria is undoubtedly defective structure. Lesions of quantity and quality in parts, and normal quantity and quality in others, produce imperfect harmony and want of balance in structure, which are causes of irregular, imperfect function. Medical science may not be able to point to this or that form and character of brain and nervous system and say, "This is hysterical and that is not"; but, by observing the general organization and noting carefully its manifestations in disposition and character, the hysterical personality can be detected.

The terms hysteria and hystero-epilepsy imply that woman is subject to those affections owing to her sexual organs. Such is not the case. Her whole organization is responsible, and if any part is more so than another it is the peculiar characteristics of her brain and nervous system, which predispose to hysteria, and her sexual organs, which may act as exciting causes and indirectly. This will be brought out when the causation is discussed.

Clinical History.—The character of the brain organization and mental constitution of those who are hysterical has been pointed out, and the practitioner has little that is definite to guide him, in the way of physical signs, to a diagnosis. There are so many forms of hysteria that differ so widely that one can hardly understand that the extreme types or forms can be the same disease.

The manifestations of the brain functions or symptoms, objective and subjective, are the only guides by which the nature of the cases can be obtained. First of all, it is necessary to determine if there is a hysterical tendency because

of the nature of the organization of the brain and nervous system. While this is the most essential to the diagnosis, it is the most difficult to get at, owing, perhaps, to the fact that the subject has not received sufficient attention. Temperament does not aid much, though temperament as the term is used can be readily determined. It might be presumed, or supposed, that those of the nervous temperament would be the most hysterical, but clinically it is found not to be so. That which has been called by the neurologist the neurotic temperament does not apply to the hysterical subject. It is a fact, also, that those of the phlegmatic temperament or *apathiques* may have hysteria, and often do. The symptoms which have been of most value in my investigations are sensitiveness and apprehension of anything which might injure self, without overmuch sympathy with others; marked predominance of the emotions, and want of will power, instability; and a generally explosive conversation, the patient dealing in exclamations on all occasions.

Classification is difficult and imperfect. The terms typical, mild, severe, and complicated, which are designations of the form or variety of diseases which are met with in general, do not apply to hysteria, because it includes excellent imitations of a great number of diseases. In the practice of gynecology I have noticed certain classes or groups which predominate, and these I may mention here. The mildest and perhaps the most frequent form is that of slight exaggerations, a peculiarity of the characteristics of the brain functions of given cases. The patient is morbidly sensitive—that is, she is predisposed to hysteria. Deep sorrow, great joy, and profound apprehensions are awakened by insufficient causes. Tears and laughter come in quick succession, and are so extremely pronounced that patients are said to laugh and cry hysterically. Exaggerated emotions and irritability of temper, with agreeable happy moods that come and go, express the history fairly well. All symptoms, in general, come and go—i. e., they are intermittent, not persistent, and they have "fits" of ill feeling and queer action. If there is anything constant in

the history of hysteria it is irregularity, changeableness, and want of periodicity. The history and symptoms seldom remain long the same, nor do the attacks recur in precisely the same form, especially in the class now being considered—the mild mental derangements of function. This form of hysteria is nothing more than an exaggerated functional action, which is normal to the subject of a certain kind of brain and nerves under certain conditions of life—surroundings that would or might be favorable to health and functional activity in those of a more perfect or better-balanced mental organization.

The evidence of mental perversion has been referred to in discussing the peculiar characteristics of hysterically disposed subjects. There is exaggeration of the normal emotions. Joy and sorrow, expressed in crying and laughing, are induced by slight causes, and are often uncontrollable; they pass off, to recur on slight provocation. Fits of depression and listlessness come and go: morbid irritability and capriciousness of temper always exist. The moral sense is often perverted. The disposition to magnify one's ills is often carried to falsification. Whimsical nothings are invented to attract attention and service to the troubles of the patient. Such patients violently hate those who venture to disbelieve their stories, and, on the other hand, they are extremely devoted to those who will sympathize with them and listen to their tales of woe. The disposition to deceive is often manifested, and they will do all sorts of foolish and cruel things to themselves in order to excite sympathy.

In those cases of active hysteria caused by disease, or more particularly functional derangement of the sexual organs, certain symptoms are present that are to some extent diagnostic. Such patients are disposed to refer their pains, aches, and irritations to the sexual organs. Those of the sthenic or catabolic variety, in whom the sexual impulse or appetence is strong but unexercised, are at times vivacious, subject to fits of laughter, and aggressive in company, and they have fits of anger on slight provocation, while the asthenic or anabolic are weak, languid, despondent, and complain of

weakness of the sexual organs. They, if thoroughly confiding, admit that they have "dreams that are not all dreams," and from which they awaken greatly exhausted. They recover and become more cheerful, only to relapse.

The sthenic have sometimes, and to a marked degree, periodical convulsions of an active or violent type, and in the asthenic convulsions are less active, resembling rather faintings. The peculiarity of the hysterical fainting is that there is general or circumscribed flushing of the face, and the pulse is not so feeble as in cardiac syncope. These paroxysms come more frequently at the menstrual period. There is often dysmenorrhœa that is purely hysterical and is characterized by irregularity. Sometimes they appear to suffer violently, and at other times or periods they do not suffer at all. Excessive secretion of the vulvo-vaginal glands precedes and accompanies these hysterical explosions. All the symptoms of the ordinary forms of uterine and ovarian disease are simulated and greatly exaggerated.

In the more marked cases of hysteria, in addition to the perverted brain function, there is a great variety of functional derangements of all the organs of the body, such as disorders of motion, showing itself in paresis of the extremities, most frequently of the lower ones, the patient declaring that she is unable to walk or move. Of this all degrees are noticed, from almost complete paralysis, which is very rare, to slightly diminished motion. In this hysterical paresis or paralysis the muscles respond to the electric current, and show no diminution in their excitability. Sensibility in those cases is sometimes diminished. Another peculiarity in these forms is the rapid improvement which sometimes takes place, to be followed by relapse, which comes as suddenly. The paralysis is almost always increased by any excitement, especially of an emotional character. Occasionally, too, it shifts its location: first, in one arm or limb there is a diminution of motor power, and then it changes to the other side. The upper extremities are less often affected than the lower. Paralysis of the laryngeal muscles is quite common, giving rise to a hysterical

aphonia, the peculiarity of which is that the patient appears to be unable to make an effort to speak, and so the whisper is soft, almost inaudible, and it differs in this respect from the hoarse or rough whisper of those whose vocal cords are damaged from syphilis or tuberculosis. This aphonia, too, comes suddenly and disappears as suddenly, to occur again.

Continuous or permanent contraction and rigidity of muscles occur frequently in hysterical subjects, and may follow the hysterical paralysis or happen independently of it. Sometimes this rigidity affects one whole side of the body, and again the legs are rigid and occasionally distorted, imitating all sorts of deformities, such as club foot and the like. Contraction of single joints often occurs and is very persistent, the knee seeming to be the favorite joint for these hysterical manifestations. Disorders of sensation, hyperæsthesia, and anæsthesia are very prominent. There is a dull, aching pain in different parts of the trunk, the hypogastric and iliac regions being favorite locations. In fact, there is no portion of the body that is free from these peculiar hysterical pains. Headache, pain in the eyes, ears, and the spine, and wandering pains, as they are called, too, are common. Sometimes in hysterical patients they are really feigned.

The senses also come in for their share of derangement—sight, hearing, smell, and taste are all deranged, and the digestive organs and function sometimes so much so that there really is a hysterical dyspepsia. Respiration, also, is often affected, a dry, hacking cough being one of the most prominent symptoms; a painful feeling in the larynx another, while globus hystericus is common. Attacks of rapid, labored breathing, yawning, sneezing, and sighing are all occasionally noticed. The circulation, too, is often involved; palpitation of the heart is quite common, and a form of angina pectoris is at times manifested. Disorders of the secretions are not rare, and this is observed especially in the secretion of large quantities of limpid urine, which generally takes place during a paroxysm or explosion of hysteria. Sometimes it occurs after excitement of any kind. Again, the secretion is defi-

cient, there being partial suppression, which lasts usually for a brief period. Retention of urine is also quite common, but as this retention is due to muscular spasm, it may be a purely nervous perversion. Irritation of the bladder is frequent, and a constant desire to urinate is one of the most persistent symptoms in hysterical patients. These deranged functions of the bladder I have summed up in one expression—the hysterical bladder. Sometimes there is derangement of the liver secretion. Lastly, the mammary glands may be affected, the breasts becoming swollen, congested, and secreting milk in those who are not nursing. Hysterical mothers, too, during lactation are liable to have suppression or partial suppression, and a change in the secretion, so that the milk becomes unwholesome or innutritious.

The most unsatisfactory part of the clinical history of hysteria in regard to functional derangements is, that if they continue for any length of time, or recur a great many times, they become permanent and real affections which will persist after the hysteria which gives rise to them, or the deranged innervation of hysteria producing them, has subsided. One peculiarity of all the functional derangements is that they usually come on suddenly, last for a longer or shorter time and disappear as promptly as they came, and may recur again and again. In this respect they differ from other functional derangements or disorders due to altogether different causes than those of hysteria.

The first impression that one gets from studying the symptomatology of hysteria is the endless variety of the symptoms, and it seems almost impossible to make them of any real diagnostic value. This arises from the fact that hysterical subjects are the greatest possible mimics, and their functional disorders in the great majority of cases are imitations of all diseases known to the patient. There are, however, certain peculiarities of these symptoms which apply to all of them—i. e., the suddenness of their appearance and their intensity or severity, their brief or limited duration, and the absence of any apparent organic affections to account for

them. Bearing these points in mind, they become of value; as they say in law that "those who testify too much weaken their evidence," so it is with hysterical patients. They endeavor to prove so much by their symptoms that the clever diagnostician at once sees proof that there is no trouble save hysteria.

The diagnosis of hysteria, on account of the peculiarity of the clinical history, has to be made in the great majority of cases by exclusion. The skilled and experienced diagnostician who can readily detect all functional and organic diseases excepting those that are hysterical, can by careful elimination prove conclusively, or arrive at a definite and positive diagnosis; and the ability to do it must always depend upon skill in general diagnosis. The differential diagnosis between this disease and neurasthenia will be given hereafter.

The prognosis in hysteria is, as a rule, favorable. As patients advance in life the nervous system becomes somewhat blunted in its sensitiveness, and so the patient can accommodate herself to her environment; or, in other words, the hysterical personality becomes, through time and experience, greatly modified and improved: this much as applied to ordinary hysteria in its multifarious manifestations.

There remains to be considered a form of hysteria which in some of its characteristics is so well defined as to deserve a special consideration: I refer to hystero-epilepsy. This term is applied to severe convulsive attacks which very closely resemble the paroxysms of epilepsy, and yet the condition differs decidedly from true epilepsy, and only occurs in hysterical subjects. So closely did this form of hysterical paroxysms resemble true epilepsy that some authorities believed that both disorders existed together, or perhaps it would be better to say that it was an epilepsy in hysterical subjects. Charcot, however, to whom we are indebted for most of all that we know on this subject, believes that it is pure hysteria, and only takes on the semblance of epilepsy.

The peculiarities of hystero-epilepsy which help to distinguish it from true epilepsy are, that preceding the attack

there is usually a feeling of general malaise, loss of appetite and sometimes nausea, vomiting, and headache. Some are quiet and morose, others are excitable and noisy. If there are any other hysterical derangements of function they now become more marked. There is an *aura* felt which commonly begins in the iliac regions. This lasts for a time, and then the patients are seized with a convulsion, usually with a feeling or a warning that it is coming, so that they generally can take care of themselves. The convulsion almost invariably begins as in true epilepsy. Sometimes the patient screams, is pale, and, if standing, falls; the body and limbs become rigid, and occasionally the body is bent backward. According to Charcot, the rigidity is seldom followed by clonic convulsions. At times the convulsion is most marked on one side of the body, as in true epilepsy; at others the body is violently contorted, extraordinary postures being assumed, and delirium sometimes supervenes. The attack very often ends in tears and laughter, and after this the patient is likely to remain melancholy. These attacks may recur again and again at short intervals.

From Charcot we learn that the paroxysms are to be distinguished from true epilepsy by the fact that they can be modified or arrested by compression of the ovary. I saw several cases while with Charcot, and they were all arrested promptly on very severe pressure being made over the ovaries. The temperature, he tells us, never rises above 101° F. or thereabouts, whereas after a series of true epileptic fits a temperature of 105° F. may be attained and may continue for a time. Perhaps one of the most important differentiations is that attacks of hystero-epilepsy may follow each other in rapid succession until scores or hundreds occur in twenty-four hours, and yet the patient's general state is little affected thereby. Oft-recurring paroxysms of epilepsy with an accompanying high temperature place the patient's general health in a critical condition.

Causation.—The hysterical personality is largely hereditary. Mothers of highly nervous temperament—neurotic sub-

jects as they are called—often have hysterical daughters. Tubercular mothers, it is said, may transmit hysteria or a hysterical organization. It has been said, too, that gouty subjects may have hysterical offspring. It would appear, then, that not only is hysteria inherited, but many other defects or peculiarities of constitution may be transmitted—not in their own form, but in the form of hysteria or the hysterical personality. Education, training, and surroundings have, no doubt, much to do with producing this imperfect development which gives the hysterical tendency. Maldevelopment from improper education, culture, and general training, as has been pointed out in the beginning of this work, certainly has much to do with the causation of hysteria. The overdevelopment of the emotions in petted, "spoiled" children, the utter neglect of the motor and co-ordinating faculties, and above all the example of associates, are of importance in this direction.

The exciting causes are strong disturbing external impressions, shock from fear, and joy or sorrow. These are all capable of bringing out this latent or quiescent hysteria in subjects predisposed to the malady. Irritation or functional derangements of any of the organs or tissues of the body are also powerful exciting causes, especially if the functional disorders are associated with some pain and irritation. Severe or acute diseases are not so likely to excite hysterical paroxysms or attack. In fact, hysterical patients, when they are really ill and suffering from any severe and serious disease, are very often relieved from their hysterical attacks.

Hyperactivity of the nutritive forces, or a diminution in the amount of their work, are two conditions of the nutritive system which seem to favor hysteria. It may be said that there is a sthenic and an asthenic form of the ailment, one appearing to be fostered by idleness and the other by over taxation. It has been noted that hysteria most frequently manifests itself for the first time at puberty, at the time when the young subject is brought into contact with new impressions and fresh demands are made upon the organization,

and when the evolution of the sexual organs reacts upon or excites the emotions. Hence, improper management at this period of life often eventuates in attacks of hysteria. As the name implies, the disease is largely dependent upon the sexual organs in women, but I am satisfied that it is only so in part. Diseases and functional derangements of the sexual organs are more likely to produce hysteria than diseases of other organs and tissues of the body, but that is simply due to the fact that the sexual organs are more closely allied to the organic nervous system and to the emotions than any others. And while it is true that in diseases of the sexual organs, especially of the ovaries, hysteria is caused by reflex influences, it is far from being a fact that the sexual organs are the only factors in the causation of hysteria; they should only be taken as prominently related to hysteria in the line of causation.

Treatment.—In discussing the treatment of hysteria it is to be understood that I shall confine my remarks to the prevention and management of the various forms of this affection that are dependent upon the influence of the sexual organs in health, and also certain general diseases of the sexual organs. In thus circumscribing the discussion of the subject so as to keep it within the scope of the present work a number of forms of hysteria having no appreciable relation to the sexual organs will be omitted. Hysteria being very largely a hereditary condition, and consequently beyond the control of the physician, nothing need be said on this subject. Much that will be said, however, regarding the management of hysteria may apply to the treatment of pregnant women who are of this diathesis, because it is clear that during gestation if the hysterical mother can be kept free from such attacks, the less likely she will be to transmit that personality to her offspring. Much can be accomplished in the management of children born of mothers so affected. Such girls should be carefully watched and guided, so that, as far as possible, they may attain that kind of development calculated to enable them to outgrow the hysterical tendencies.

In case hysteria shows itself in early life—and this is largely due to the mother being predisposed to the trouble by constitution of mind and body—every effort should be made to improve the surroundings. Should this be found to be impossible, as it ordinarily is at home, the child should be removed from maternal care and placed under proper management either in a boarding school or sanitarium. When this is not practicable, a nurse or governess should be obtained who can carry out the physician's directions. Nothing is more important, or indeed more difficult, to secure than the proper kind of nurse. So many nurses are themselves hysterical that they are entirely incompetent to manage young hysterical subjects, no matter how skillful in other cases they may be. In selecting a nurse, then, the greatest possible care is necessary. Older nurses should be chosen—those who have had experience in the management of nervous cases and who have been successful, and who are either naturally entirely free from hysteria or by life training have entirely overcome such a tendency. The nurse or attendant should kindly but firmly rule the young hysterical case and possess the power of diverting the attention of the patient from anything that may excite manifestations of the affection. One who possesses what, in common parlance, is called magnetism (which medical men call hypnotic power) will be able to take advantage of the fundamental law of hypnotism—suggestion—and apply it to advantage in directing the patient's thoughts into healthful channels.

Abundant exercise and sufficient rest should be carefully regulated; outdoor life, tepid or cold baths, followed by brisk rubbing, plain, nutritious diet, with a limited amount of animal food, attention to all the bodily functions, and, above all, regularity in everything, should all be carefully attended to. In regard to the mental training, all the brain exercise in the way of healthy education should be prescribed that the patient can endure. The moment any mental exercise begins to cause excitement either from extreme interest or discouragement and irritability, it should be

stopped, and not resumed until perfect rest has been obtained. It is difficult to regulate the amount of mental exercise, and it can only be done by careful watching. Any excitement, either from work or amusement, should be carefully guarded against. In short, everything that is necessary to secure health of body and mind, and freedom from excitement or overtaxation, should be secured.

The majority of cases of hysteria manifest themselves first at puberty; at least the attention of the physician is generally called to such cases at that time. In discussing puberty and menstruation the management has been given somewhat at length, and need not be repeated here. Suffice it to say that, in hysterical cases especially, any symptoms that point to trouble of the sexual organs should be at once attended to.

Strong, healthy girls sometimes have dysmenorrhœa that is not accounted for by any affection of the sexual organs, but is purely hysterical or nervous in character. Such patients should be removed from all ordinary excitement, and still be mentally occupied as much as possible so as to divert attention from the function of menstruation. When the dysmenorrhœa is attended with gastric disturbance, such as nausea and intestinal derangement, constipation, or, what occasionally happens, diarrhœa, remedies should be employed to quell the nausea, and one of the best is small doses of bromide of soda with hydrocyanic acid. If there is diarrhœa, it should not be checked unless it continues more than twenty-four hours. If it does so and there is intestinal pain with it, the bismuth or the subgallate of bismuth will generally give relief if given in connection with rest and fluid nourishment in small quantities. In regard to constipation, if the patient is at all plethoric, saline laxatives are by far the best, especially if there is a tendency to menorrhagia. On the other hand, if the patient is anæmic and menstruation is scanty, aloes and belladonna in small doses given two or three times a day will give better results. Many of the strong, healthy girls who are hysterical are sometimes fortunate enough to have profuse menstruation. This usually alarms the patient

and the mother, and aggravates the hysterical element. This can usually be set at rest by the assurance that it is a fortunate state of affairs.

I have observed that menorrhagia or free menstruation is a great safeguard to hysterical women, and if a physician can not persuade them that such is the case, he may be able to quiet their apprehensions by assuring them that there is a congested condition which can only be relieved by this free depletion. In case it goes so far as to cause any depression or debility, remedies will be administered to control it. Some cases really require treatment for menorrhagia; these are easily relieved by rest in the recumbent position, but not upon the back, and should be allowed to get up and move about for a short time repeatedly during the day, five to ten drops of the fluid extract of hydrastis canadensis being administered before meals. All animal food should be interdicted, highly seasoned articles of food, and especially all alcoholic stimulants. In case this ordinary management does not entirely relieve the hysteria and nerve perturbations, bromides should be given to the strong and full-blooded, and camphor and asafœtida to the asthenic patients.

It not infrequently happens that at puberty and for months afterward hysterical patients complain of backache and intermittent leucorrhœa, or leucorrhœa with usually a free secretion of the vulvo-vaginal glands, frequent urination, and a sense of heat and fullness in the pelvis. These symptoms indicate nothing more than a physiological condition due to deranged innervation. Young hysterical subjects having their attention called to the sexual organs by the advent of the menstrual function are very apt to give undue attention to the sexual organs. They notice the slightest symptom, magnify it, dwell upon it, and so increase the deranged innervation; and mothers frequently bring their daughters to the physician complaining in this way and are rather urgent to have something done, fearing that they have some very serious womb or ovarian trouble. The patients themselves, especially those who have studied enough of anatomy and

physiology in high school or college, are often very positive that they have some serious trouble. Such cases should, if it is at all possible, be relieved by general management, and any local examination or local treatment should be avoided.

I know of nothing more prejudicial than local examinations for supposed pelvic affections in hysterical girls. I insist upon it, then, that no examination should ever be made unless the symptoms point beyond doubt to some organic affection, and not until every effort has been made by the physician to give relief. I have seen mild cases of hysteria aggravated and confirmed hysterical subjects made by physical examination of the pelvic organs. So strongly am I convinced of the perniciousness of this practice that I have for a long time absolutely refused to examine such cases, except under an anæsthetic, and then not until I was perfectly satisfied that all efforts in the way of medication and general management failed to give relief, and consequently that there must be some important organic disease which required local treatment.

I may give one case selected from a large number that will illustrate this point. A hysterical mother brought her daughter, who was similarly afflicted, to see me. They were both in tears, the mother terrified by her daughter's condition, and the daughter fully persuaded that she was very dangerously ill. Apart from her hysteria she was somewhat anæmic; her digestion, while not bad, was slightly impaired; she menstruated irregularly, going over her time usually for a week; the flow lasted a shorter time than usual, and she had backache, or rather she had pain in her spine at various points, which was continuously changing. She had occasional leucorrhœa, with a sense of fullness, heat, or congestion about the vulva. At times she had very frequent urination, but usually was able to sleep through the night without micturating. I assured both the patient and her mother that she had no local disease whatever, and that all her ill feelings were due to her depleted condition and overexcitement and anxiety, and prescribed for her hysteria, putting her upon tonics,

sedatives, nourishing food, and above all things insisting that she should go to boarding school or somewhere that she might be under the care of a proper nurse or governess. This part of the treatment they declined to follow out; everything else, however, was attended to as best they could. I insisted that the mother should treat her daughter, not as an invalid or sick person, but as a nervous, hysterical girl. This she tried to do, but, being hysterical herself, failed.

At my second visit there was some improvement, but not much. I saw nothing more of her for a year, when I happened to meet the young lady by accident, and she hastened to tell me that I made a mistake in her case when I said there was nothing the matter with her womb and ovaries; that she had gone to another doctor, who had examined her and found that her uterus was tipped, and that there was a good deal of inflammation. She assured me that the inflammation was there, because the examination hurt her so dreadfully that she had a fainting attack and was delirious all day, and was unable to get out of bed for several days. Certain treatment was employed once or twice a week for about three weeks. At that time she was very much worse than she had been, but the doctor assured her that he had overcome the difficulties (local trouble), and that when she got strong she would be entirely well.

It is some time since all this happened—a couple of years, I think—but she is still an invalid, or fancies that she is; and I am perfectly confident that if she could have been put under proper care and her pelvic organs left severely alone, by herself and her medical attendants, she would have been well. I base this opinion upon the fact that I have treated many such cases medically, and they completely recovered. But, what is more important, I learned from the doctor who treated her locally that he really did not find anything the matter with her, unless it was a congestion.

Tampering with the pelvic organs when there is nothing the matter with them increases hysteria tenfold, as we might rationally suppose. On the other hand, in young subjects,

even if there is some actual disease, whether of the ovaries or of the uterus, that can be relieved by local treatment, it is generally well borne, and the patient's hysterical symptoms are usually relieved. In older patients who have uterine disorders I have found that, as a rule, when protracted local treatment is employed, the results are very favorable, and the effect upon the hysterical condition beneficial. The danger which the physician must at all times guard against is not to be persuaded to make local examinations or employ local treatment in cases of feigned diseases of the sexual organs so common among patients suffering from this imitative disease.

The direct or special treatment of hysteria itself, after all the known causes are removed, are tonics and sedatives especially. The strong or full-blooded patients require hydropathic treatment, bromides, and active exercise, as well as occupation of body and mind. The asthenic or debilitated do better upon tonics and electricity. Tonics such as quinine, iron, strychnine, and the salts of zinc answer best. Antispasmodics have also been used from time immemorial; the best of these, no doubt, is asafœtida, although camphor, valerian, and ammonia are good. Sedatives are not always competent to produce sleep, and so anodynes become necessary. Opium, of course, should be avoided. Camphor and lupulin, sometimes camphor, lupulin, and a little belladonna, will give sleep. Sulphonal and phenacetine, with the addition of caffeine, answers well in some cases, but not in all.

In all the treatment of hysteria the physician must have the patient's entire confidence, and his rulings must be absolute and accurate, as the disease is often produced and aggravated by suggestion, so that important element of hypnotism—suggestion or mental influence of the attending physician—is the most potent remedial agent of all in hysteria. Some practitioners endeavor to rule those patients with a rod of iron, and there are some who will submit, but the great majority of them rebel, and it is better to lead quietly than to drive. It is in the management of the low class of cases that the *personnel* of the physician is of so much value. Some prac-

titioners are unable to manage hysterical cases, while others have a wonderful facility in doing so; the same may be remarked of nurses.

The treatment of violent paroxysms of hysteria and hystero-epilepsy, as it is called, requires more than a passing notice. While the improvement of the general health, antispasmodic tonics, general hygiene, and mental training all apply in cases of hystero-epilepsy, there still remains to be considered the management of the patient while in paroxysms or convulsions. It has been already stated that Charcot found that the paroxysm of hystero-epilepsy could often be relieved or arrested completely by pressure upon the ovaries. This is true, no doubt, but I do not believe it is because of any beneficial effect of pressure upon the ovaries. I think it is simply an impression which acts more after the fashion of hypnotism by suggestion. I have been led to this belief from the history of one or two cases that I saw early in my career; in fact, they were hospital patients of mine before anything was known definitely about hystero-epilepsy. One was a young, vigorous, hysterical girl, who was brought into the hospital by the police department, having been found in the street in an epileptiform convulsion. As I remember her now, she was a typical case of hystero-epilepsy. It was the belief, however, that she was a true epileptic. The house surgeon, who had quite an interest in her case, discovered that he could break up her convulsion by putting aromatic spirits of ammonia upon his hand and placing it over her mouth and nose. I had occasion to see him treat her, for he was quite proud of his discovery, but, believing that the case was hysterical and that this treatment was merely an impression or suggestion, I tried putting my hand over her mouth and nose without ammonia, and found it had the same effect. He also tried it, and found the same result. It was noticed, however, that when the ammonia was not used she was likely to have a relapse.

In another case, under the care of an acquaintance, when he was first called to see the patient and found her in a vio-

lent paroxysm, he made pressure over the carotid arteries and the convulsion at once stopped. He directed some member of the family how to do it, and every time the convulsion occurred pressure was made and the paroxysm was arrested.

Again, a powerful impression made by dashing cold water on the head, or keeping up a continuous douche of it on that part, will break up the paroxysm without harm. The inhalation of ammonia or camphor sometimes will have the like effect. Perhaps the most powerful agent, and one that not only breaks up the paroxysm but is curative to a certain extent, is an emetic. While a student of medicine, the professor of therapeutics recommended tartar emetic in the treatment of hysterical convulsions, and soon after engaging in practice I had occasion to try, not tartar emetic, but an emetic dose of ipecac.

A young married woman, strong, vigorous, full-blooded, and hysterical, discovering what she supposed to be a little attention on the part of her husband to a neighboring lady, declared that she would not live under such conditions, and that she had taken poison. She was heard to exclaim, "Now I have done it!" then threw a bottle on the grate and broke it, and went off immediately into a violent convulsion. A messenger came for me and told me the circumstances and I was soon at her bedside, and found her violently convulsed, but the character of the convulsion was hysterical. I doubted the fact of her having taken poison, but as her friends insisted upon it, and thought it quite proper to administer an emetic, I did, giving her a large dose of ipecac, either the wine or sirup, or equal parts of each, which, I am unable to remember at this moment. The result was that the convulsion was broken up, and, so far as I know, she has never had another. It was exceedingly beneficial. She was very sick after the emetic, and remained so long enough to give her time for reflection. I think she saw the folly of her behavior, especially as I had standing orders that, if she showed the slightest disposition to have any more trouble of the kind, she should at once be given a dose of the same medicine.

CHAPTER XXV.

NEURASTHENIA.

This is an exhaustion of the nervous system, due no doubt to malnutrition. Many names have been applied to this affection, such as nervous exhaustion, nervous debility, and nervous prostration. I prefer neurasthenia, in compliment to my friend the late Dr. George M. Beard, whom I greatly admired. My attention was first directed to the subject in a comprehensive way at a time when Dr. Beard was working up the subject, when I saw much of him. For a time he attended my clinics, and used electricity in the treatment of many of my cases; and I learned from him much of the character of this neurasthenia, and of the use of electricity in its treatment as in the treatment of diseases of the sexual organs generally.

Neurasthenia usually occurs in early and middle life. There are two forms, apparently: in one there seems to be hyperæmia of the nerve centers; in the other there are evidences of exhaustion from malnutrition, as well as dilitation of the vessels.

The symptoms are, to a large extent, the same in all cases, and it occasionally occurs as a primary affection. Quite often it is due to other diseases; and in turn, when it occurs as a primary affection and is permitted to exist for any great length of time, it leads to other diseases, functional for the most part. According to Charcot, neurasthenia may become hysteria and hysteria neurasthenia, a hybrid form partaking of the nature of both diseases, and known as hystero-neurasthenia. Löwenfeld, of Munich, one of the best-informed men

on the subject of neurasthenia, claims that there is such a hybrid. It is, perhaps, best to let this disease describe itself, noting its most prominent symptoms. I might say, however, right here, that some authors claim that neurasthenia may be limited to the brain or to the spinal cord, or that it may exist in both. In the practice of gynecology I have never been able to make these distinctions, but have usually found that the cerebro-spinal and nervous systems are about equally involved. The cerebral symptoms are, first, diminished brain strength; there is marked loss of mental concentration, and the memory is defective or impaired; but this is apparently due to want of attention or imperfect perception. There is almost always increased irritability or excitability, manifested by increased desire for mental work or activity, with, however, diminished ability. The mental excitability is most marked in those cases where, presumably, there is a hyperæmic condition. In some others there is simply loss of brain strength without much irritability or excitability. In the latter class the brain power is usually at its lowest ebb in the morning and early part of the day, but after getting thoroughly wrought up with the duties of the day considerable brain power is manifested—in fact, the mind sometimes appears to be unduly brilliant; but this activity is followed by an early and marked depression.

Subjects complain of unpleasant feelings in the head without pain, which is peculiarly characteristic of nervous exhaustion. This may be due in part to the fact that nervous patients notice their feelings or symptoms, and are far more liable to exaggerate them by thinking of them. This introspection, already discussed, causes depression oftener than too much brain work. Brain work invariably increases all those unpleasant feelings, such as fullness in the head and the feeling of heat and pressure on the top of the head. This pressure on the top of the head was said by the older authorities to be indicative of uterine disease, but it is of less diagnostic value in pelvic affections than in neurasthenia; for it is seldom present, no matter how severe the pelvic disease may be,

unless there is neurasthenia accompanying it. Many of these symptoms may, no doubt, be present in perfect health, but pass unnoticed except in nervous patients. Dizziness is a symptom which is of importance, and is very frequently present in cases of neurasthenia accompanied by uterine or ovarian disease, especially in functional exhaustion of these organs. As a rule, the pupils are dilated; occasionally they are not—in fact, where hyperæmia is present they never are. The eyes are weak, and there is generally a sense of heat, burning, and smarting in them, with a certain degree of photophobia.

In recent days a great deal of attention has been given—in fact, overmuch by some—to defective vision, which, it is claimed, accounts for this weakness, and is put down as a very important cause of neurasthenia. There is doubtless something in this, but I am satisfied that it has been grossly exaggerated; for I have known a number of cases that have been operated upon again and again by the highest authorities under this class of oculists without deriving the slightest benefit, yet have promptly recovered the full power of their eyes when they were relieved of their local diseases and had their general nerve strength restored. I think it is always wise, however, when the eyesight is much complained of, to have the eyes thoroughly examined by an oculist who has not been carried away by the present popular craze that nearly all the ills that the nervous system is heir to arise from myopia, presbyopia, or some other defective condition.

The hearing is sometimes disturbed; occasionally it is abnormally acute, so that noises are extremely disturbing. Some suffer from tinnitus, and in extreme cases there are confused murmurs and imaginary sounds heard. Timidity or want of courage is perhaps one of the most prominent symptoms; especially is this the case when the nervous affection is due to or associated with uterine or ovarian diseases. This timidity leads to apprehensions of all kinds; a fear that transcends so far ordinary feminine fear that it is decidedly morbid and symptomatic of neurasthenia.

Disturbed or imperfect sleep is a prominent symptom. In one variety the patient is usually able to go to sleep but soon wakes before being refreshed, and failing to sleep again, she does not get sufficient rest. Others have the greatest difficulty in securing sleep, but when once they succeed it is difficult to awake them. They get the credit of being lazy in the morning. It is important to note the distinction, because when we come to discuss the treatment of insomnia it is very necessary to make these clear distinctions in order to succeed.

This sleeplessness or insomnia is usually attended with drowsiness during the day and disposition to sleep; in fact, the patients sometimes drop off to sleep in the chair or even while talking, but almost immediately awaken. Indeed, such cases when they undertake to sleep or indulge the feeling of drowsiness at once become wide awake on lying down. The motor faculty is also impaired. There is usually decided muscular weakness, so that active exercise soon exhausts. In some there is a great dislike to exercise; others are irritable, and anxious to do a great deal of walking and moving about, but become exhausted and greatly depressed because they are unable to do more. Along with this there is impaired co-ordination, so that the patient stumbles, drops things held in the hand, and is generally awkward.

Certain vaso-motor disturbances are also noticed; sudden flushing of the face or blushing on the slightest provocation; the hands and feet are apt to be cold and clammy, and red spots appear on the neck and face under the slightest mental excitement. This I have noticed, too, in a wonderful degree while giving ether to neurasthenic patients. The neck and face and chest became spotted to a remarkable extent. Sweating as a symptom is important and very common, and patients are very apt to perspire profusely on the slightest mental or muscular exertion. I find, too, that they are apt to break out in perspiration on retiring at night, an annoying symptom which is frequently added to insomnia. The symptoms manifested by the digestive organs might be summed up in a word by saying that they suffer from those of nervous dys-

pepsia—that is to say, the appetite is capricious, sometimes abnormal in regard to the choice of food, and attended with morbid cravings not unlike those that occur in pregnancy. These patients are nearly always constipated and suffer greatly from flatulence.

The respiratory system shares in the general debility, and one symptom is especially worthy of notice. On lying down, the patient often complains of a feeling of suffocation; it is an asthmatic feeling, but without the asthmatic breathing. The circulation is easily disturbed by mental or physical action, and they almost always suffer from attacks of palpitation, intercostal neuralgia, and occasionally angina pectoris. The urinary organs are sometimes affected; now there is polyuria, and again the urine is scanty and high-colored. The passing of large quantities of limpid urine is, I think, as common to neurasthenia as it is to hysteria. Very often there is irritability of the bladder.

Concerning the function of the sexual organs, we find, in cases of exhaustion pure and simple, that there is generally a decline in the sexual appetence, so that their social duties are often irksome, sometimes repugnant. In the other class, with exhaustion and a hyperæmic state of the nerve centers, there is often a heightened sexual irritability; such patients are prone to overindulgence, which only aggravates the neurasthenia, or, if this is avoided, they are disturbed at night by troubled and polluted dreams. The symptoms that so far have been given are, as a rule, intensified during menstruation, and, strange as it may appear, those who menstruate scantily suffer most. There are a few, and usually those who have some uterine disease, that are relieved by a free menstruation.

The diagnosis is made, and with no great difficulty, by exclusion. If there are no evidences of organic disease of the nervous system or of the organs of general nutrition and locomotion, the diagnosis then rests between neurasthenia and hysteria, and it is not difficult to differentiate between the two.

In hysteria the symptoms constantly change, while in neurasthenia they are the same, or vary but slightly. In the former there is not necessarily that muscular feebleness always found in true forms of the latter. In hysteria the attacks are intermittent, there being intervals of apparent perfect health, while the patient in neurasthenia is continuously ill. Influences from without change and even do away with symptoms in the first, while in the last the symptoms are little if any altered on suggestion. Diverting the attention in hysteria often breaks up an attack, but in neurasthenia the symptoms are more likely to be aggravated by anything that sets the mind to work. Hysterical patients give a history of repeated previous attacks, while the neurasthenic do not. There is a violence and an exaggeration in hysterical attacks absent in neurasthenia.

Causation.—Venereal excess, especially when means of preventing conception are employed, induces neurasthenia—not so much from extreme indulgence in this function as from the accompanying wear and tear on the nervous system from anxiety, depression, and perhaps an ever-present sense of wrongdoing. Sexual starvation, by keeping up undue excitation, leads to nervous exhaustion. Sterility in those who are extremely fond of children often tortures women into a condition of exhaustion. Exhausting diseases of the sexual organs are made doubly so because they give rise to so much anxiety and apprehension. This is the case more so than in painful and serious affections affecting the nutritive system. The incapacity which deters the patients from taking active exercise adds to the irritability and exhausting worriment. Very ambitious women feel greatly annoyed when they are incapacitated either for active employment or enjoyment in the way of agreeable entertainments. In the order of development I have generally found that first comes oppression or depression; this leads to malnutrition, and finally to nerve starvation or exhaustion.

The predisposing causes are temperament, heredity, and environment. Those of the nervous temperament—the *sensi-*

tifs—are predisposed to neurasthenia only because they are more liable to overmental exertion. Heredity, no doubt, has much to do in the matter, and those of the neuropathic tendency are more liable to break down in the race of life. It is certain that environment is partly responsible for predisposition; and climate, occupation, and social position may tend to produce neurasthenia. The direct causes, too, are often found in environment. We speak of neurasthenia as being due to overwork, especially brain work, but I am satisfied that it is due far more to anxiety and worry. Work does not wear out the machinery; work pure and simple never hurt any one. It is the jarring and friction which come from overexcitement and overanxiety that do this; and when they in turn lead to errors in diet and rest, nervous exhaustion follows as the consequence.

Treatment.—Trousseau attributes to a great naturalist the statement that "the animal lives for the nervous system," and he deduces from this profound saying the fundamental principle which he thinks ought to guide us in therapeutics. The therapeutic indication in the treatment of this affection of the nervous system, and indeed in nearly all, is to restore the nutrition. In the general management of the cases now under consideration the nervous system demands a large share of attention, and, happily, the resources of our art have been greatly developed in this department within a few years. No longer ago than the time when I was a student of medicine asafœtida and valerian were the chief remedies given to nervous women, so called, and if these did not cure them, a change of air was advised as a last resort. Now all this is changed for the better, and the progress made has been chiefly through the labors of neurologists. It does not appear that so much has been accomplished by the gynecologists in this direction, except that the most advanced among them have been sagacious enough to take advantage of the therapeutics developed by those specially interested in the nervous system and its diseases. This is very often the most difficult thing to accomplish. In exhausted conditions, un-

attended with great irritability, all that is necessary is to secure quiet by seclusion.

Those suffering from nervous exhaustion require rest. This can be accomplished by removing the patient from the cares of life, whether those of the government of a family and household, or the duties of a profession or a business. Isolation is to be secured, and that for a time is all that is required in some cases. Those who are exhausted without being irritable will rest if they get a chance, but the majority require more than that. Many who require extra sleep are sleepless. They ought to be quiet, but prefer, in fact insist upon, keeping on the "go," to obtain relief from the tortures of nervous irritability which appear to them to be aggravated by repose. Such patients require to be toned down to the point of repose. Quiet surroundings and a nurse who understands her business will do much to effect this, yet medicines are often necessary. Having secured the conditions, the next requisite is to obtain sleep without resorting to opium, chloral, cocaine, or the like.

In dealing with those who are irritable, and presumably suffering from congestion of the nerve centers, bromides are of great value. I might modify the saying of Sancho Panza and render it, "Bless the man who invented the bromides!" They are a great boon in the management of such cases. This is so well known that I need only add that, in my observations, I have found that it is best to push the bromides carefully, bnt toward their full and specific effect, and to do this safely small doses of nux vomica should at the same time be given. While advocating the liberal use of bromide, I would say it should not be long continued. I rarely give the drug longer than a week or at most two, except perhaps one dose in the evening to prolong the night's sleep. This answers best in those cases where the patients go to sleep at the proper time without much trouble, but waken after an hour or two and fail to get any more sleep. The formula which I prefer is: Bromide of soda, one ounce; tincture of nux vomica, two drachms; essence of pepsin, two ounces;

peppermint water, one ounce. Of this, a drachm to be given three times a day before meals and at bedtime.

When this preparation is not well borne, or does not accomplish the object, I give the following mixture: Tincture of conium, one ounce; camphorated water, six ounces, of this, giving two teaspoonfuls at noon, evening, and bedtime. In place of this I have used, tincture of lupulin, one drachm, tincture of belladonna, two drachms; tincture of cardamom, three ounces, giving a teaspoonful at noon, evening, and bedtime. In the case of one patient, when all of these had failed, I got the desired effect by giving two grains of croton chloral three times a day—at noon, evening, and bedtime.

All of these I consider as substitutes, to be used in rare cases when the bromides fail.

Alcoholic stimulants may be named, but to say that, as a rule, they are not well borne. While they may quiet the nervous symptoms for a time, the effect upon the pelvic organs is usually unfavorable, and there is often a reaction which is not satisfactory, so that what is gained in one direction is lost in another. I must say, however, that in certain cases of extreme exhaustion half an ounce of whisky, with some nourishment, like a bowl of clear soup at bedtime, has produced a refreshing sleep.

Next to the bromides in procuring rest in cases of neurasthenia is massage. This has two great advantages. The first is that of a nerve sedative, and its passive exercise of the muscular system and stimulation of the circulation greatly improve the ultimate nutrition. It does in the way of exercise much that the patient in health can do for herself. The introduction of massage in rational therapeutics, as an aid to ultimate nutrition and a nerve sedative, takes very high rank. A skillful nurse can, by systematic manipulation, soothe the tegumentary nerves, and produce that normal effect which invites rest and sleep. That which used to be the property of designing and magnetic rubbers is now modified and adapted to rational use. It is a stone which the builders for a time rejected, but now fills an important corner. This massage is

true passive exercise—the only way that exercise can be given without exhausting or taxing the nerve centers. By this means the muscular system can be quieted down to the condition adapted to normal rest and sleep. A like effect appears to be produced upon the spinal nerves.

Finally, there are many cases that obtain relief from all complications, such as general malnutrition and diseases of the sexual organs, and still the neurasthenia persists; such patients are not well, although they appear to be, and they are easily exhausted, mentally and physically.

The management of such cases is very briefly well summed up at the close of a very valuable essay by Dr. Ludwig Bremer in the Medical Fortnightly, February 15, 1894. He states as follows (I have taken the liberty of changing the gender of the patients referred to):

Briefly stated, the treatment of neurasthenia consists in educating the patient to live within her nerve-income, which is small. The woman of average strength can not with impunity attempt to perform the muscular feats of an athlete. Likewise the neurasthenic can not do what many of her acquaintances do; she is to forego a great many pleasures, abstain from many pastimes and entertainments, refrain from many articles of food, which to her seem simple, natural, and healthy, and yet stand in the way of her recovery. She must, above all, learn her limits. Her treatment must be a sort of education, teaching her the difficult art to adapt herself to her surroundings, to re-establish the normal equilibrium which is lost between her as an individual, and her environments. To mitigate, if not prevent, the collapses which constitute such a discouraging feature in the course and progress of neurasthenia—discouraging to the patient alike and the family—must be the chief object of treatment. To achieve this end the patient must be taught to avoid extremes, especially of emotion and work, mental or physical; in short, a bodily and mental hygiene adapted to her individuality must be instituted. No rest cure, no seaside, gymnastics, cold or warm water—in fact, no particular method, and, least of all,

drugs—will bring about restoration to health. They may do good to some and harm to others. In short, there is no special treatment for Beard's disease, but there are many different plans of treatment for different *persons* suffering from it. In other words, the *individual*, not the disease, is to be treated.

CHAPTER XXVI.

SEX AND ITS RELATIONS TO INSANITY.

THE interdependence of nervous diseases in women and their sexual organs has already been shown in some slight degree in Chapters XXIII and XXIV, but the relations between the various forms of insanity and diseases of the sexual organs are more intimate, more generally retroactive, and have had but little investigation from the medical point of view. The pathologist can not undertake this study successfully, for he is not a gynecologist. Nor is an alienist apt to ascribe to physical, demonstrable causes the subtle mental changes we call insanity. Moreover, were he unprejudiced, we know that derangements of the mind often obscure all symptoms of bodily disease.

Extended facilities for studying sex and its relation to insanity presented themselves when I took charge of the gynecological practice of the King's County Insane Asylum at Flatbush, upon invitation of Dr. Shaw, its medical director.

In beginning the study of the four hundred patients in that institution, the first thing I found was that the ordinary methods of investigation were of little or no value. No histories could be elicited from insane women, and records were, rightly enough, kept with reference to mental conditions alone. Nor could I find anywhere a system of examining patients and recording their histories from the point of view of the gynecologist. Hence I devised a method or system whose object was to elucidate the relations of insanity in women to the condition of their sexual organs, and, on the other hand, the derangements of the sexual organs dependent upon insanity.

It is tempting for the alienist to put insanity as the primary, the causative event, and to regard any pelvic derangement as an accidental accompaniment; and we know that formerly the purely medical point of view has too often been that insanity is a late result of disease of the sexual organs.

The obliteration of the line between these two slightly antagonistic domains, the unprejudiced search for the initial condition, and the union of medical and psychological means in research and in cure—these were the objects in my system of investigation.

Since most inquirers have chosen the sexual organs as the starting point in their studies, since it is easier to begin at the tangible—the demonstrable—in working up to the functional, and as the physician has the advantage of knowing when his patients have uterine or ovarian disease, before the advent of insanity, we are not surprised that a more correct knowledge exists concerning the effect of sexual derangements upon insanity than the converse. While one is not likely to overlook insanity in patients known to have disease of the sexual organs, the psychologist and alienist may overlook uterine and ovarian diseases in his insane patients.

Enough has been said to show that a clear distinction should be made, in the study of ætiology, between insanity caused by existing active disease of the sexual organs, and insanity arising from brain exhaustion, produced by prolonged or excessive functional activity of these organs while free from any disease. I incline to the belief that as many, or even more, cases of insanity can be traced to the latter—i. e., exhausting activity—as to the former—i. e., active disease of the sexual organs. The bearing of these facts upon the diagnosis and treatment of insane women will be apparent to all medical men. In the one class of cases the sexual organs require no attention, except as factors in the indirect cause of the mental affection, while in the other the disease of the sexual organs is the direct cause of insanity, and tends to keep it up until removed by the treatment which ought in all cases to be instituted. In all that follows, in all that is said

concerning the influence of the sexual organs upon insanity or mental derangement of any sort, I wish to emphasize the fact that an *underlying taint, usually hereditary, must be* present or latent; this is ever to be understood.

Following the plan of the book, insanity at puberty first demands attention; and while it is true, it is not always true, that reflex action induces insanity at the outset of the active period of life, when mental derangement appears that early. Mental and emotional excitement, along with the demands of the reproductive system which are abruptly made at that time upon the nutritive and nervous systems, may develop insanity at puberty when the sexual organs are well developed and perform the function of menstruation normally.

Perhaps this subject can be more clearly elucidated by giving some clinical records.

A girl fourteen and a half years of age, belonging to an educated, well-to-do and refined family wherein there was no history of insanity as far as could be made out, passed through all the physical evolutions of puberty normally, but the mental characteristics of womanhood were exaggerated. The girl was a *sensitif*, the nervous element predominating in her temperament.

At puberty her modesty became marked shyness, her languor developed into indolence, and her affections assumed the emotional type. She complained of her "head feeling queer," and she had all sorts of apprehensions about herself and her condition. Backache, general malaise, and a sense of fullness and engorgement of the pelvis were all magnified in her accounts of herself. Now she was moody and sought to be alone, and again she feared solitude and hung around mother and sisters, complaining of feeling badly. At times she was disposed to be melancholy, and at other times she exhibited marked irritability. Occupations that once were pleasures became annoying, and frequently she was sleepless and had distressing or horrible dreams. All these symptoms continued until her mind became in a mild way unbalanced.

I asked Dr. J. C. Shaw to see her in consultation, and he

pronounced her case subacute mania due, in all likelihood, to puberty. She was placed in the care of a nurse thoroughly accustomed to the charge of cases of mental disorder, and her general nutrition—which was faulty as shown by capricious appetite and constipation—was improved by tonics and laxatives. Tepid or warm baths were at the onset employed for their sedative action, along with massage, and later cold baths were used for their tonic effects.

She was given fifteen grains of bromide of sodium at noon, evening, and bedtime, along with three drops of liquor opii compositus. She was secluded from association with her family, especially her mother, whose sympathy had an unfavorable effect on her.

Under this treatment she readily recovered, and then for six months traveled here and abroad. She is now married and has had several children, and, I believe, has never since shown any appreciable weakness of mind or body.

Another case which contrasts with this one is that of a girl between the ages of fifteen and sixteen, whose father and mother were both healthy German-Americans. The mother was of an anxious, care-taking disposition, who sought for many things to worry about, and who, if seeking heaven with half the energy, would at once be crowned with glory. This mother informed me that some members of her family had been insane. Her daughter arrived at puberty in good form, health, and strength, with a record of previous freedom from any important illness. She passed through all the evolutions of puberty, assumed all the womanly characteristics, entered into social and educational duties with renewed vigor, seemed to enjoy both, and was just as ambitious to attract the opposite sex as her girl companions.

She soon began to show signs of overtaxation—the appetite failed, anæmia appeared, and she was unable to keep up with school and society duties. All this caused her to worry about herself, and she very soon surpassed her mother in fretting. Amenorrhœa then followed, and this alarmed both herself and the whole household. She grew extremely apprehen-

sive concerning herself, not only fearing that she might become a physical wreck, but that she might become mentally useless. In fact, at this very time she believed herself to be so, and could not anticipate any amelioration of her condition.

This brooding over her imaginary troubles made her withdraw from, even shun, all companionship. Now and again her mind wandered, and she finally became a monomaniac, her mania taking on the form wherein she "was all wrong" and "had no right to live such a useless life." She avoided every one save the members of her own family, because she was sure every one was laughing and jeering at her misfortune.

During this time I treated her for general anæmia, nervous exhaustion, and consequent amenorrhœa, joining in the hope of herself and mother that she would be all right if she could only menstruate. The mother believed that the menstrual derangement was the whole trouble; but I knew that her amenorrhœa was due to her general mental and physical state.

She improved under restorative and tonic treatment, and menstruated; but her mental state was aggravated rather than improved thereby. She was then placed in the care of Dr. W. Browning, who isolated her in her home and treated her with such tonics and sedatives as were indicated, managing her case as alienists of the highest order do.

This resulted in recovery in ten or twelve months; in fact, the doctor discharged her as cured at the time of this writing, with the understanding that he would keep her under observation, feeling that there was a possibility of a relapse.

The greater number of cases of insanity occurring at puberty that I have seen were in those with a marked predisposition to mental alienation and in whom secondary and full development of the sexual organs never took place. Some of these cases, I find, arrived at puberty and developed in an imperfect degree the characteristics of the mature woman; menstruation was always irregular and imperfect.

Mentally their evolution was arrested, and in place of

becoming womanly and intelligent they became either demented or acutely insane. Upon examination of these under an anæsthetic, I have found the sexual organs all present but never developed to a normal degree.

In another class of cases with a family history of syphilis or insanity, or both, they were mentally weak—some, it is true, were physically big and strong—and at a little past the time of puberty I found, in place of secondary development occurring, that such girls became insane. The insanity was at times acute, at times a partial dementia or melancholia.

It is during the active—the child-bearing—period of woman's life that we find the majority of cases of insanity, mania, melancholia, and hallucinations resulting in a more or less direct manner from diseases and derangements of the sexual organs. This, of course, is what inductive reasoning would lead us to expect, for between the times of puberty and the menopause not only is every sexual function active, and constantly so, but the relations between the nervous system and the pelvic organs are closely and persistently intimate. It is here that the general practitioner and worker along the usual lines of practice in the diseases of women is reminded how little he has done with the opportunities at his command, compared with the even scantier researches of a similar character upon the part of the psychologist and alienist.

How diseases of the sexual organs produce insanity is the at present time, and in many cases, a mooted question. Cause and effect we all freely admit, but the mode of action of this cause in producing this effect is not so clear.

Three distinct classes of cases can be determined where, at the active period of life, sexual derangement produces insanity, irrespective of reflex action :

Firstly, among young widows there is a social famine, a disaster to the nervous system, that results from an abrupt change in the active period of life. A woman has been happily performing all the functions of that period, and the deprivation induces emotional disturbances that are largely

potential in unbalancing the mind; hence melancholia or insanity follows.

Secondly, sterile married women, who want children and are made doubly unhappy by living in hope and longing, often become insane, for their emotions are perverted, so that home life is miserable, and they have the mortification of knowing their inability to procreate, or else are suspicious that the failure is due to the husband. This, of course, wrecks the social system, and is in itself enough to unbalance a mind not originally strong, or entirely free from any hereditary taint of insanity.

Thirdly, a class that may eventuate in insanity is that in which oftentimes there has been a long engagement—as it is called—not ending with a marriage, especially where privileges have been indulged in for which no legal right as yet existed.

Lastly, we arrive at the most difficult subject to discuss—sexual perversion, which is meant to include all kinds of self-abuse. This subject I have already treated of in a preceding chapter. It is referred to thus briefly here, since it is taken for granted that the various means of self-gratification are well understood.

There is a condition—as yet undescribed, so far as I know—that I shall venture to call "mental masturbation." Occurring in both sexes, it is much more frequent in young women than in men, at any age.

The results of mental masturbation are akin to or identical with those of the more loathsome practice; and I have witnessed them chiefly among the physically strong, non-studious society girl of the upper classes. She bathes, has massage, pays every attention to her person—none at all to her mind—lives a life amid erotic surroundings, is stimulated by lights, music, the dance, the supper, the wines, and next day is enervated. At the end of a season, wherein her nervous system has been on a tension, her senses all aroused, and her higher faculties kept in abeyance, and, too, after she has had men for her almost constant attendants and companions, how

can we be surprised if nervous exhaustion with leucorrhœa and mental and menstrual derangements are prominent symptoms?

In a *sensitif* I have no doubt that a displacement or an acute disease, either of the uterus or the ovary, is quite sufficient to cause a mental derangement which may or may not subside upon cessation of the pelvic disease. While such clearly reflex cases are not uncommon, we observe a great many more wherein reflex action plays no part, and where with great certainty the physical pelvic causes are alone to be held responsible.

I have seen patients, suffering from uterine disease existing for many years, finally becoming insane or melancholy without the slightest exacerbation of the organic malady; and it seems most probable that, from the prolonged suffering, perhaps depletion, the nutrition of the brain became impaired or altered at first, so that the reflex action did not enter as a causative factor. Here the direct cause is a lesion of nutrition of the brain—perhaps demonstrable to the pathologist—produced ultimately by irritation and exhaustion from uterine or ovarian disease.

We find the same organic disease of the uterus and ovaries in insane women as in their rational sisters, with identical physical signs, but a marked difference in or absence of subjective symptoms. Malignant uterine disease occurs, I think, a little more frequently in insane than sane women; and I believe that sequelæ of previous diseases—as pelvic peritonitis, pelvic cellulitis, puerperal metritis, and the like—are found more frequently in this class of cases.

Menstrual derangements, dysmenorrhœa pre-eminently, and at times the normal event itself, cause or are accompanied by a more or less mild form of alienation, which, from its regularity of occurrence at stated intervals, is called *periodic insanity.*

Here, as in all other cases, there is either a hysterical personality or a predisposition to insanity. This is particularly noticeable in cases of temporary aberration, occurring during

a normal menstruation. When there is dysmenorrhœa, due to some lesion of the sexual organs, the suffering is sufficient to unbalance a defective brain and nervous system.

Among women of the poorer classes frequent child-bearing and lactation stand among the most noteworthy and important causes of insanity. My own clinical observation, a perusal of the records of all the asylums in this country, and the testimony of observing medical men—all these prove that the great drain imposed upon women by too frequent maternal duties deranges the mind of the majority of them to some extent.

It has already been said that the largest number of insane women are found in the active period of life—to be exact, between the twenty-fifth and fortieth year of life—and of these a very large percentage have been married and have borne children. To be sure, some of these may have had coexistent disease of the sexual organs, but the exhaustion of lactation and of frequent child-bearing, without any other complications, sufficed to bring on more or less mental derangement.

Extraordinary functional activity of one set of organs has here so detracted from the normal performance of another, an intimate associate, that the brain has suffered at the expense of the sexual system. Were the histories and records in asylums kept with some view of the interdependence of the pelvic organs and nervous system, I have not the slightest doubt but that statistical evidence would be overwhelming in proving the above statements.

Since mental weakness, nervous exhaustion, or nervous depression is the very first manifestation of disease, since no palpable pelvic condition is present to attract the physician's attention when the cause of mania is being sought for in those who are exhausted and worn out from child-bearing and nursing, we can readily account for the paucity of our medical literature on this subject. There is no dearth of explanation when it is a question of anæmia from lactation, but subsequent nervous conditions are untouched—uninvestigated, perhaps unsought for.

And how is it that the exercise of the normal function of womanhood should so often unbalance not only the physical but the mental equilibrium? Outside the effects of rapid and long-continued reproduction we find the answer is, that too many physical and mental cares of all sorts and conditions overwhelm women during the reproductive period. How often do we see among the poor that they have to work steadily for very existence while attending to household duties—"after hours," as it were—and then in addition bear children and give them sustenance? Among the rich a similar state of affairs exists, except that here the manifold duties, onerous and irksome even if social, are self-imposed, and perhaps more mental than physical, and to my mind, for this reason, worse, from the point of view of future mental health when maternal duties are carried out.

No constitution can endure the dual task of labor and maternity, with its drains on mind and body, without weakening perceptibly and finally breaking—the break all too often being shown by mental derangements. What the female organization has to undergo in destructive metamorphosis and waste without compensatory repair I question if physicians fully appreciate or estimate.

Often during pregnancy personal nutrition seems to increase, perhaps indeed it is more than an appearance of well-being, and the evidence of good health is trustworthy. There are also, at this time, an ability and readiness to do work that is astonishing. Yet should this potential energy be abused, general debility must follow. Women very frequently resist this added tax, and keep on using their powers energetically, so that no ill effects are apparent at the onset. This is especially the case at the first pregnancy and lactation, after which "the best health of their lives" may be claimed; but the repetition of these, with the responsibilities that accrue with each advancing year and child, induce nervous oppression, nervous exhaustion, and mental derangements at the last.

This course of events I have noticed especially among the

class of women who have been raised in ease and comfort without having acquired habits of industry or regularity. It is when daughters of this class marry and live in less affluent circumstances, or when an adverse tide of affairs sets in, privation and fretful disappointment being constant attendants of household duties and cares, that the "raising of a family" has in it all the factors necessary for inducing insanity. Among asylum records many such histories can be elicited. This insanity is not reflex; it is generally centric, although indirectly dependent on the sexual organs.

Many facts might be adduced to prove that the normal functional activity of the sexual organs tends to undermine the brain and nervous system to an extent quite sufficient to lead to insanity if carried to extremes and under unfavorable conditions. Not only do certain organic diseases of the sexual organs play a most important part in causing insanity, but they tend to retard restoration of the normal mental equilibrium. All diseases of the uterus, vagina, and ovaries, where there is alteration in structure or change in position, are strong ætiological factors. Moreover, conditions that are products of diseases or sequelæ of them—as pelvic peritonitis, pelvic cellulitis, and cicatrices of the cervix or vagina—often induce severe enough pelvic pains, through pressure, adhesion, or contraction, to cause or aid in the continuance of insanity.

Unfortunately, unlike functional diseases, these affections of the sexual organs are not relieved upon the occurrence of mental derangement. A lacerated cervix, or a displacement of the uterus or ovaries, could not, of course, be restored to normal by any mental derangement that ensued. Indeed, on the contrary, insanity is often a bar to necessary treatment, and so sexual derangements and insanity aggravate each other reciprocally and recovery of either is retarded.

It is certain that when diseases of the generative organs exist in insane women the brain condition, if at all influenced, is influenced for the worse. And we can not but believe that if certain diseases of the sexual organs are capable of causing insanity, they must also tend to its continu-

ance. It is to this class of genital affections among the insane that the science and art of gynecology apply with marked advantage.

To be sure, general anæsthesia that appears in some forms of insanity may relieve the patient from pain and suffering induced by old adhesions.

In chronic ovaritis and in prolapse of the ovaries the pain may be diminished as much by the mental alienation as by opium. We are not sure, however, but that the disease of the sexual organs may still be exerting its baneful influence on the general and nervous systems. If insane fancies engage steadily the patient's attention, the local incubation may nevertheless play as sad havoc.

Insanity at the menopause is often traced to general systemic derangement or imperfect elimination, rather than to disease of the sexual organs. The older authors were wont to ascribe it to sudden suppression of a habitual discharge. On referring to the chapter on menstruation and its derangements it will be found that in one class of cases the menopause is attended or followed by a decided activity of nutrition with an indisposition to mental or physical exertion. As a result we have imperfect assimilation, faulty elimination, and, as a consequence of these, excrementitious plethora. The effect upon the brain of all this is to produce a certain degree of torpor and melancholia, and insanity is almost certain to be developed if there exists what is now called the psychotic state.

An entirely opposite condition is seen in those who at the menopause suffer from malnutrition, and have increased mental excitement and ability with lessened power. Such women usually have dyspepsia, lose flesh, become sleepless, and fret or worry on every possible opportunity. Their brain partakes, of course, of the general malnutrition, and, if this is permitted to go on, some form of insanity is almost certain to ensue.

There is yet another class—and perhaps the most numerous—who, possessing vigorous health and enjoying all the luxuries of life, have so assiduously cultivated the habits of

sexual intercourse that, instead of a diminution of the sexual appetite at the menopause—as normally is the case—it remains as in the active period of life. When menstruation finally ceases, the subject obtains no longer the relief from the sedation of a free flow, and appetence is therefore increased. Unfortunately, there is sometimes in such cases an inability to obtain relief from complete gratification. This is a mental condition which does not always receive physical compensation, owing to the impossibility of fully performing the function. This is a quite sufficient cause for erotomania, the form of insanity usually but not always developed in these cases.

To instance a few typical cases: A lady of excellent constitution and good health, the mother of a number of children, and who was of a decidedly lymphatico-nervous temperament—a *sensitif-apathique*, which Ribot says is an extremely rare but possible temperamental union—approached the menopause with excellent health, good digestion, and in the full enjoyment of life in all its relations.

When, finally, menstruation ceased she gained a little in flesh, became florid, was sometimes drowsy and apathetic in the daytime, and restless during the night, with broken sleep and disagreeable dreams. She complained of headache; had "queer" feelings; became disinterested in her family and in affairs generally; talked about herself continually; and had all sorts of strange ideas, which at first she was aware were foolish. Acute indigestion, constipation, hæmorrhoids, and scanty, muddy urine were symptoms next noted. Then, in the hope of distracting her attention, she traveled abroad and fell into the hands of a physician in Spain, who, mistaking her mental state for one due to debility, increased the quantity of wine at her dinner and gave morphine suppositories for the hæmorrhoids, which latter were the only physical discomfort of the patient. Unfortunately, she was made more comfortable by this treatment, and soon became dependent on the suppositories, returning from abroad in six or eight months much worse.

When I saw her I made a diagnosis of subacute mania,

and placed her in the hands of Dr. Shaw, who isolated her in her house and placed her in charge of a very competent nurse. He very gradually diminished the quantity of opium and stimulated her elimination by toning up the liver and kidneys and exciting the skin and bowels to perform their functions. I believe he also gave her nerve tonics, nux vomica in full doses. She gradually recovered, and for the past three years has been perfectly well.

A very different type is that where malnutrition is the chief factor. At my clinic in the hospital I saw an American woman of nervous temperament, who had no taint of insanity or predisposition thereto so far as I could find out. She was of an extremely active disposition—frugal, industrious, and ambitious.

She had long neglected her diet; and although in her usual health at the menopause, her appetite then became capricious, and she grew inattentive to her eating. The menopause came in the usual way, but her malnutrition increased, and what was formerly her mental and moral activity now became excitability. She was impatient, slept but little and that restlessly, had headaches, backaches, and some pelvic tenesmus, though without the slightest evidence of any disease of the sexual organs. All this account was elicited from her at her first appearance at my clinic.

Rest, nutritive food, and tonics were ordered, and sedatives, camphor, hyoscyamus, and lupulin were given at bedtime. No improvement followed, due, I fear, to the fact that the treatment was not carried out, especially as concerned rest and diet, which I considered the most important factors. Becoming worse, she was sent to the asylum, and I regret to say I did not get her subsequent history. She certainly had acute mania when last seen by me.

Recently I have seen two cases, which seem quite typical, where increased sexual appetence following the menopause led to insanity.

The first of these cases was that of a lady, in excellent health and condition, married to a man vigorous mentally

and physically, who had an abundance of means, a good social and public business position, and who lived very generously. They were equally fond of society, champagne, and sexual indulgence. The husband died when she was near the menopause; she felt the loss keenly and for a long time was very emotional. In addition, she had backache and leucorrhœa, with abnormal irritation of the sexual organs. She hoped all this would subside after the menopause, but herein she was disappointed, for her sexual desires greatly increased. She slept poorly, and almost every other night had "a dream that was not all a dream." She suffered more yet from backache, vesical and general pelvic tenesmus, and a feeling of weakness, due more to oppression than to exhaustion. Her physician gave her tonics and an abundance of nutritious food with her wine at dinner—to which last she was long accustomed—and even advised more stimulants; this produced indigestion and brought about rheumatic pains which crippled her by specially involving the knees.

She sought relief by frequenting society, but here she was unfortunate enough to become enamored of a man much her senior, who had known her in her palmy days, and who, as far as possible, reciprocated her affection. They were unable to see each other save at long intervals, and then only in society. This very much aggravated the condition of affairs, and she spent much of her time weeping over the loss of her husband and in regretting that she could not enjoy the society of her new object of attraction.

When she came under my observation I found a mild attack of senile vaginitis, vulvitis, and metritis; her tongue was heavily coated; secretion and excretion were sluggish and embarrassed; and the urine was loaded with solid constituents, keeping up a cystic irritation which caused her to urinate frequently during the day and occasionally at night. The deranged innervation of the bladder was such that when a desire to micturate came and she was unable to promptly relieve herself, there was some incontinence. I endeavored to

correct her digestive disturbance by putting her on a spare diet, stopping all stimulants, and giving her lithia water to drink, with pepsin and diastase after her meager meals, to insure their complete digestion. To aid in obtaining sleep I administered bromide of sodium afternoons and evenings with small doses of nux vomica.

Baths and massage were employed to relieve the rheumatism, the massage being followed by light gymnastic exercise and riding in the open air. She improved a little, but the gain was not lasting, and gradually she acquired subacute mania of the erotic character. Now she is a half-demented creature, who spends her time weeping over the ecstasies of her past life, and longing for aid and relief.

The influence of diseases and abnormal conditions of the sexual system in producing some form of insanity is felt not only at puberty, in the active period of woman's life, and about the time of the menopause, but after the "change of life" is well over—in what we may call the senile part of life—we find the potent factor still at work. To instance one typical case: At the request of Dr. Shaw I have recently seen a widow, childless, about sixty years of age, who was wealthy, and insisted on living in her elegant house alone with her servants and a young lady attendant, spending most of her time in bed. She was very emotional, and suspicious of all her friends and relatives, fearing that they much desired her money and property. She had long been thought "queer," and for about a year before I saw her had been in some sanitarium for nervous diseases.

I believe Dr. Shaw considered her half insane, and, although reticent, she had told him of pain and distress about the pelvic region, and he suspected she must have some disease of the sexual organs. I gained her confidence so that she admitted that at night in her sleep she "had dreams" ("as if her husband visited her"). She complained of an acute pain in the neighborhood of the clitoris, greatly aggravated by standing or walking. On an examination, I found no disease of the sexual organs, save that the clitoris was un-

usually large; and I was unable to find out whether the pain arose from neuralgia of the pudic nerve or from an engorgement of the erectile tissue of the clitoris and parts about it. I presume it was the latter, on account of its exacerbation on standing. I reported her condition to Dr. Shaw, but I understand she declined treatment directed toward her sexual organs, and I learn that she has not improved. What the outcome will be I know not.

It now remains to study the effect of insanity upon the function of the reproductive system, and here it should be said that the time of life at which I studied insanity was, perforce, the middle period, two hundred cases being between the ages of seventeen and forty-six. For six months these women were carefully watched from the point of view now under discussion, and at the end of that time but eight were lost, from death or having been discharged from the asylum.

Menstruation was, of course, that function whose derangements could be most readily watched and discovered, and it was to abnormities in this important function that I first directed my investigations. Of the remaining 192 women, only 27 menstruated regularly and normally, 30 did not menstruate at all, 4 menstruated once, 8 twice, 10 three times, 18 four times, 34 five times, 24 six times at irregular intervals, 31 seven times, and 6 eight times during the six months. It is thus seen how the menstrual function is affected by insanity; and I think there are few other conditions where such a marked disturbance is a result.

One of two causes may be at work here: First, the impaired general nutrition that we so often find in insane patients. All functional activity not absolutely necessary to life is suspended in these cases, since general health is reduced to such a low standard. This is the same state of affairs as we find in all severe exhausting diseases, notably phthisis pulmonalis. It is really a conservation of energy. Nature suspends certain functions whose absence will not too seriously damage the feeble organization, and we regard this as a for-

tunate provision. Malnutrition sums up the cause of amenorrhœa in this, the first class of cases. Here the sexual organs were generally found anæmic, having all the appearances of those in women who have passed the menopause, save that the atrophy found in the very aged was not present.

A careful investigation of those cases wherein the menses were suppressed revealed the fact that in the majority impaired nutrition of the sexual organs was the basis of the amenorrhœa.

Secondly, the diseased or abnormal nervous system can be the sole cause of the menstrual abnormity. There were a few cases in the above list where general nutrition was good—normal—and the pelvic organs were in a healthy condition, yet where there was decided amenorrhœa. Faulty innervation was here the certain cause, and an abundance of proof might be adduced to show how suspension of the functions—one or all—of the sexual organs arises in the insane from deranged innervation. We are all familiar with cases of acute suppression of the menses arising from mental shocks, prolonged mental anxiety, and the like; and these afford proof of our belief that deranged innervation can be and often is a sole cause for amenorrhœa in the insane.

The rule thus seems to be that insanity induces amenorrhœa, and as some of the patients who were in my care menstruated regularly, or had menorrhagia or too frequent menstruation, the reason for this had naturally to be sought for.

I found menstruation to be affected in proportion to the degree of the insanity. In women who menstruated regularly, the insanity was of so mild type that neither nutrition nor innervation was deranged, while in those who had menorrhagia or who menstruated too frequently there was some form of uterine disease. These latter symptoms point to uterine disease, and should be accepted as evidence of it in insane women.

It is, however, by no means claimed that amenorrhœa is a certain indication that all the functions of the sexual organs are in abeyance. Not only may ovulation go on as usual, but the sexual appetence may exist in its normal degree, as we all

know, when menstruation is absent. This, it must be said, is rather the exception than the rule.

Nevertheless, there are still other reasons for the belief that a general functional inactivity prevails in insane women who have amenorrhœa; for in a few cases of this class who have died, and on whom a post-mortem examination could be made, I found no evidence of ovulation having occurred. Ovulation is thus seen to be arrested in insanity, in some few cases at least; but more evidence is needed to fully establish this statement in a general way. Another evidence, to me, that the sexual organs return for a time to a condition bordering on the functional inactivity of childhood or advanced age is the fact that insane women rarely if ever manifest maternal or marital affection of any kind; and we know these to be ruling passions in woman's life ordinarily.

One question in this connection seems to demand special attention—both from its interest medically and because so little has ever been said or known regarding it—and that is, What effect does insanity have upon diseases of the sexual organs?

First in importance comes that class of maladies where the functional activity of the sexual organs is deranged from abnormal innervation or alterations in the vascular supply; where the organs, anatomically, are normal, and to whose morbid state the term "functional disease" is so aptly applied elsewhere in this work.

I find most authorities on uterine pathology admit that very many diseases of the sexual organs met with in practice result from hyperæmia—active or passive—and changes in nerve irritability, where alterations in the caliber of the vessels and changes in quantity and even quality of blood are prominent but temporary conditions. The vessels are always ready to regain their normal tonicity, and capable of doing so. Here the influence of insanity is most favorable. Functional uterine diseases may be said to vanish on the occurrence of mental alienation. The statement that "insanity cures functional maladies of the sexual organs" can not be

questioned, the proof being based on thorough clinical investigation. It should not be forgotten that *functional* disorders alone are referred to. Of course there are exceptions; and those who have masturbated or have suffered a mental derangement of a venereal kind, while free from uterine or ovarian disease, have centric affections only, and belong to quite another class.

This disappearance of functional disorders on the supervention of insanity agrees with what has been said about the effects of mental alienation on the generative functions. If the vitality of one system may be lowered by disease elsewhere to an extent that its function is annihilated, it is, perforce, reasonable to expect return of function when the current is, as it were, turned on. Pathologically, also, it is true that disease in one part of the body may disappear when some morbid activity is set up in another. This has long been called "antagonism of diseases."

I watched the progress of a case to illustrate the principle just enunciated. The woman had congestion of the uterus and leucorrhœa, and when she became insane both these conditions vanished and that, too, without local treatment. Her uterine disease, added to other causes of mental disturbances, was thought to have made her insane. Furthermore, not a few cases, whose history of previous uterine disease I obtained through friends, were found, on examinations made at the asylum, to have recovered.

Since functional uterine diseases are ameliorated or cured when a woman becomes insane, psychologists have naturally enough attached but little importance—from the point of view of complications—to them compared with the coexisting mental affections. Those who claim that the class of diseases now under discussion require but little notice in insane patients utter but a fraction of the truth.

Again, those who claim that the progress of *organic* uterine disease is at all influenced by insanity are as far wrong as the gynecologist who believes that the large majority of women who lose their reason do so on account of disease of the sexual

organs, or those who insist that all insane women should be placed in charge of a specialist for diseases of women. Once we have established the fact that an insane woman has no organic uterine disease, we have done pretty nearly all the service that it is possible to render. After the diagnosis of functional disease is made, the patient can and should be left in charge of the psychologist. All local treatment—except hygienic—should be abandoned, and the disturbed function restored to its normal condition by improving the general health or by the cure of the alienation.

Right here I may observe that the above rules hold perfectly good when the functions of the sexual organs are deranged from any exhausting disease—notably phthisis pulmonalis.

There remains a class of cases, functional for the most part, to which the general statements that have just been made are not applicable. Here we find manifestations of insane sexual desire, or obscene and licentious ravings. The origin of such cases is often some disease or abuse of the sexual organs; and the abnormal condition may have disappeared, or, if existing, may be subtle enough to elude the diagnostic skill of the physician. True, mental derangement, in such instances, may seem to indicate trouble of the pelvic organs; but no disease can be detected, and no local treatment avails. Care must be directed to the nervous system, for the disease is centric, not reflex. It is of course understood that while manifestations of sexual excitement can originate in the brain or nervous system, identical symptoms can be induced by disease of the pelvic organs. One can scarcely overestimate the importance of sharply differentiating diseases of the sexual organs that either cause or stimulate insanity from mental derangements which occur quite independent of other visceral lesions.

In concluding this matter I desire to repeat that abnormal sexual excitement sometimes has its origin in the nerve centers, and this too when the sexual organs are free from all disease; and also that a mental derangement of an emotional

character may persist when the causative disease has subsided. Although non-interference with functional diseases of insane women is the rule, yet when the alienated suffer from organic diseases, they have the right to all the relief that gynecology can afford—and this is very much.

In this connection the first question confronting us is, What is the ascertained effect upon the insane of curative treatment applied to coexistent disease of the sexual organs?

The roseate views resulting from a perusal of modern medical literature are somewhat delusive. The results are not so gratifying and wonderful. We hear of all kinds of strange nervous affections and mental perturbations that disappear most magically on the restoration of a laceration of the cervix, or when a dislocated uterus is replaced. It is tempting to take as a cause, what is simply a synchronous occurrence; but coincidence is not always cause. Moreover, it is unsafe to believe that a prompt restoration of sense and reason occurs in insane women when a uterine or ovarian disease is cured.

My investigations led to this conclusion: In a large majority of cases acute affections of the brain and nervous system, originally due solely to disease of the sexual ograns, will be relieved when the primary affection disappears or is cured. The result of treatment of the pelvic condition will be in direct proportion to the severity and duration of the mental derangement. We may nearly always expect marked benefit or prompt recovery in subacute mania caused or aggravated by maladies of the sexual organs; but chronic mania with similar causes and associations quite frequently remains unaffected after the local disease has disappeared. This, too, is frequently the case when the general health of the patient has improved by local treatment. In general pathology, when two or more diseases are bound by the relationship of cause and effect, the secondary, unfortunately, does not always disappear when the primary one is removed.

I have endeavored to limit the boundary line of success

which the gynecologist may expect to reach in practice among the insane.

The diagnosis of diseases of the sexual organs in the insane is beset with endless difficulties; no line of practice for diagnosticating these conditions in the alienated has yet been laid down in text-books, save in part, so that much of my study was devoted to the means of ascertaining the clinical history and physical indications of the state of the sexual organs in those under my charge.

The first thing required is a natural, clinical history of the sexual system, and very few insane can give any account of themselves in this regard. Even those who understand, and are ready to answer questions about their bodily condition, reluctantly discuss anything pertaining to the genitals; and when they are induced to do so, one does not know how far to rely upon the data obtained. Hence, as in the case of children, we must, perforce, rely on the story told by those about them—relatives, friends, or attendants. The leading points in the patient's history can thus usually be elicited upon careful cross-questioning, and much may be gained, provided the attention of the nurse or attendant can be directed intelligently to the state of the uterine function.

How sadly the condition of the reproductive system has been neglected is best shown by an inspection of the asylum records. In these, all that seems of importance is the noting of age, marriage, or otherwise, and the number of children. And, more than this, the age record is usually kept in decades, so that we know not, even statistically, the relations between insanity and puberty, menopause or active functional period.

To obviate much of this difficulty and to gather all that was possible in the way of aid to the student of diseases of women, I devised and arranged a case book for our county asylum that was approved by the medical director, Dr. Shaw. The headings are so arranged, on the blank pages, as to call out the history bearing directly on the condition of the sexual system, and if filled out with care gives informa-

tion upon all the questions raised in the above discussion. See Diseases of Women (Skene).

This is not all that is desirable, but I believe it the best attainable to supply records not only for the purposes of diagnosis, but also that the patients may have the correct skilled treatment of those who devote themselves to this branch of the science of medicine.

The method tries to elucidate the relation of the mental derangement to the functions of reproduction, and to discover, as far as possible, the condition of the sexual organs before insanity occurred. The state of the menstrual function then shows, as a rule, the history of the uterine condition; and, at the end, we note such mental manifestations as may indicate the existence of disease of the sexual organs. Here I advocate the careful observation of the speech and behavior of insane women as helps to diagnosis; and the following cases may briefly be mentioned in this connection:

My attention was called by Dr. Shaw to a girl who walked about the ward in a stooping position, holding her hands upon the genitals as if trying to support them. She did not complain at all, and she was not sane enough to answer questions about herself; her actions, however, led to the notion that something was wrong, and it was found upon an examination that she had uterine disease. In another case, that of a married woman who had borne children, there was an ability to converse quite reasonably on very many subjects, yet this woman was greatly disturbed by imagining that men visited her at night for unlawful purposes; and a physical examination revealed disease of the uterus.

There are very many ways in which cerebration reveals how the brain is influenced by the sexual organs; and this derangement, very often shown by abnormal conversation, is valuable in so far as it points to disease of the pelvic organs. Yet disease of these organs is not always indicated by obscene or licentious actions or expressions. The demoralization of the insane may arise from former bad habits and associations; or, again, it may be developed by some disease

of the nerve centers while the sexual organs are perfectly normal.

Perverted thoughts, when the control of the reason is inhibited, may be very marked and attractive, and yet there may be no physical evidence of disease; and, save disease of the brain, the patient may be well. Nevertheless, when deranged emotions, manifested by obscene speech or action, are observed in those previously modest and chaste, these should be taken as evidence of disease of the sexual organs, and should lead to further investigation.

Physical exploration of the pelvic organs of insane women has always been attended with numerous difficulties; indeed, it has been impossible to hold examinations on some insane patients. Persuasion is futile and force generally defeats the ends of the examiner, at the same time often resulting in injury to both patient and physician. The only practical method has been anæsthetization by ether, and the outcome is very unsatisfactory. It is a difficult undertaking to administer ether or chloroform to a maniac without regard to the dangerous results. We need not then be surprised that those having the care of insane women should have been very chary in the practice of gynecology. The force necessary to give ether to a maniac for the purpose of treating a uterine disease is simply distressing, and the results do not justify the means.

My purpose is admirably accomplished by the use of nitrous-oxide gas as an anæsthetic. It is quick and pleasant in its action, and that choking sensation so distressing to the sane, and particularly terrifying to the insane, is not induced.

The method of its administration is that pursued by the dental surgeons, to whom for this, as well as for other most valuable mechanical appliances which physicians habitually use, we are under deep obligations. A rubber cap which covers the patient's mouth and nose is used, instead of the usual mouthpiece. The gas is administered to the more tractable patients while on the table, and unmanageable ones are placed in a high-backed chair. The physician places the

cap over the face, an assistant on either side holds each an arm, the third firmly pressing and steadying her head against the chair.

Complete anæsthesia is then very quickly obtained, since the most refractory among them are usually quieted after a few inhalations. To avoid the deep anæsthesia and consequent arrest of blood aëration accompanying this procedure, it is best to admit some air by opening the valves, thus prolonging the patient's unconsciousness. The ensuing lividity —always a result of this extreme anæsthesia—should be avoided, for the reason that the tissues become thereby changed in appearance, thus preventing an accurate minute observation, especially so when the examiner is not thoroughly accustomed to his work.

Nitrous-oxide gas has not been followed by the slightest unpleasant effects, at least so far as the observations of Drs. Shaw and Arnold, of the Flatbush Asylum, have extended, and, furthermore, the mental state of not a few of the patients who took it seemed to be decidedly improved after its administration. One young girl, an inmate of the asylum for months, whose time was absolutely unoccupied physically and mentally, actually asked for work to do subsequent to several inhalations of nitrous-oxide gas. Now, the local treatment for her condition had not proved of the slightest benefit, either to her physical derangement or in her alienation. Hence, the improvement could not have arisen but from the use of the agent in question. There are, also, cogent reasons for regarding the nitrous-oxide gas as being a most valuable tonic in cases of extreme exhaustion of the nerve centers, and in general debility of the cerebro-spinal system.

In the New York Obstetrical Society some very pertinent and instructive cases about this new nerve tonic were related by Drs. Barker and Blake, both gentlemen administering the gases in such small doses that anæsthesia did not ensue, whereupon the results were most satisfactory. Further experimentation and observation will, I believe, show that an equal amount of benefit will follow when the gas has been

given as an anæsthetic and when a dual purpose is served; and when these purposes are so pre-eminently important, and when the results obtained are synchronous, it seems to me that extended investigation is demanded wherever any number of the insane are kept in public or private institutions. At any rate, in the domain of the diseases of women it promises the greatest benefit.

The *physical signs* of disease vary little, if any, from those elicited on examination of a sane woman, save in one or two important instances. We could not expect the percussion note to alter its pitch, because, forsooth, percussion was performed on one whose mind was deranged, nor would the size and shape of any superficial distortion be otherwise if observed in a sane or insane woman.

Palpation, however, is marked almost always by an absence of tenderness; and this is noticeable even in those who undergo examinations without an anæsthetic being given. It is rare, indeed, that patients complain of having been hurt by an examination or subsequent treatment.

Inspection reveals a pale and anæmic condition of the vagina and cervix uteri whenever the mental derangement has existed for several months and there has been amenorrhœa, the appearances, indeed, all being those of one who has passed the menopause. This must not be looked upon as any evidence of active disease, but only as exhibiting how inactive is the circulation and who poor is the nutrition.

The rectum is almost always distended in insane women, since, be it remembered, constipation is almost invariably present in this class of patients. It should always be a rule to thoroughly empty the bowels before making an examination, so as to be rid of one of the chief obstacles in our investigation.

Ovarian disease—difficult at all times to diagnosticate—is especially so in the insane. Tenderness on pressure, we all know, is a most valuable symptom in ascertaining the condition of the ovaries; and in the insane the administration of an anæsthetic completely bars out all chance of obtaining the

information on this score. And, further, if this class of patients are examined without nitrous oxide, we can not always tell from their behavior whether pain and tenderness exist or not, nor can we always believe what they say.

Palpation, however, revealed to me in one case disease of the right ovary; for, on strong pressure, the organ was found enlarged, prolapsed, and tender. Rigidity of the abdominal muscles on the same side was found, and this was in marked contrast to their condition on the left side.

The *treatment* of diseases of the reproductive organs of insane women is based upon the general principles which guide the physician in ordinary practice. There are, however, circumstances peculiar to this class of patients which must, of necessity, modify our treatment, and therefore I shall mention some facts of clinical observation which are worthy of notice. While discussing functional disease, such as amenorrhœa, it was claimed that constitutional treatment alone was required in such cases, which is doubtless true. Local treatment can accomplish very little to relieve such conditions, either among the insane or the sane. Persistent amenorrhœa seldom yields to local treatment, such as stem galvanic pessaries, the local use of electricity, leeching and blistering the uterus; and the difficulties in the way of employing such methods among the insane practically exclude their use.

In the management of cervical endometritis it is necessary to use means that do not require frequent repetition. On that account the hot-water douche (a most valuable remedy) can not be used, because these patients will not permit the nurse to treat them, nor will they, except in rare cases, use it themselves. There is the same objection to the use of the cotton-and-glycerin tampon, which requires to be renewed every day. In such cases I have used with advantage an application of equal parts of tincture iodine and carbolic acid once a week. This is a sedative, and also changes the abnormal action of the mucous membrane, causing a diminution of the leucorrhœal discharge, the erosion of the surface disappearing,

not by being replaced by cicatricial tissue, but by the restoration of normal epithelium. When improvement begins it is well to lessen the proportional quantity of the acid.

Vaginitis is also a difficult disease to treat among insane women, owing to the same objections to the vaginal douche. Little progress can be made in the management of this affection without thorough cleanliness, and that is difficult to obtain in insane patients. In fact, vaginitis and vulvitis occur oftener in this class of patients than in those of sound mind, owing apparently to want of care in keeping the parts clean. Some of the most marked cases of purulent vaginitis that have ever come under my observation were among my patients in the asylum.

The treatment adopted in these cases consisted in first thoroughly cleansing the mucous membrane with a sponge, and then applying a mild solution of nitrate of silver, or sulphate of zinc with fluid extract of hydrastis canadensis and water, and then introducing a tampon of marine lint which was changed for a new one every two or three days, until the inflammation subsided. The tampon is sufficient to cure most cases of vaginitis without any other treatment. It separates the inflamed surfaces, and, by absorbing the secretions, keeps the parts perfectly clean. The tar which it contains is one of the most useful remedies in inflammations of mucous membranes, and, besides, fulfills a modern demand in surgery in being antiseptic. This method of treating vaginitis has been tried in general practice and answers well, but it is among the insane where its value is most marked.

Endometritis polyposa, or fungosa, with the menorrhagia which is caused thereby, is quite a common affection among the insane, judging from the number of cases which have come under my own observation. To meet the indications and the many conditions which the accompanying insanity gives rise to, I have adopted, with satisfactory results, the following method of treatment:

Having made a positive diagnosis, a small curette or scoop with a flexible stem is carried into the cavity of the uterus,

and the whole of the fungous material is broken down and removed. This simple operation is often followed by complete recovery. Sometimes the polypoid growth returns and a repetition of the operation is necessary. In a very few cases it has returned again and again, but has finally yielded to bichloride of mercury given in the usual doses, and to the application of tincture iodine and carbolic acid after the use of the curette. There is nothing new in this method of treating the disease in question, except in omitting preliminary dilatation of the cervix by tents. This is entirely unnecessary and should be avoided, because it is painful and dangerous, while the use of the blunt scoop is less likely to give after-trouble than any other form of intrauterine treatment that I am familiar with.

The methods of treating this affection given in our books are first to dilate, use the curette, and finally apply some caustic or alterative application to the whole endometrium. This demands that the patient should be confined to bed several days, care being taken to prevent the development of inflammation, of which there is always danger. Such practice is, however, impossible among the insane, as there are few of that class of patients who can be kept quiet in bed while undergoing such treatment. But the same object can be attained without interrupting the patient in her usual mode of life. I have used the curette in office practice with as little caution as I make mild applications to the cervical canal, and so far have had no accidents. In the confidence based upon that experience the treatment was employed among the insane, and the results have been quite satisfactory.

With regard to lacerations of the cervix uteri in the insane, I have simply to say that the evil that such lacerations give rise to are well enough known to warrant us in declaring that any patient with that complaint, whether sane or insane, has a right to claim relief at the hands of the gynecologist. The success of the operation depends to some extent upon the details of after-treatment, such as rest in bed and cleanliness. This is difficult to obtain among insane women, but in lieu of

that I have employed a method of operating which gives fair results, even when the patient goes around during the healing process, to wit: the use of silk sutures and the lint tampon in place of the douche.

The advantage is that these sutures can not wound the vagina like the ends of a silver-wire suture, and the tampon supports the uterus and guards against putting a strain upon the sutures when the patient moves or sits up. This method is well adapted to practice among the insane. While I would hesitate to operate in the usual way upon an insane patient, I have practiced the method described with marked success. A question may be raised as to the propriety of leaving a silk suture in the cervix during the time requisite for healing. The constant heat and moisture to which the suture is exposed certainly favor decomposition of the silk, and if that should occur the suture would cause suppuration. I have demonstrated that no such results need be feared when the silk is properly prepared by immersing it for several hours in a composition of melted wax, salicylic and carbolic acids. I have removed such a suture from the cervix that had been there for one year two months and twenty days. The patient was operated upon, and when removing the sutures after union had taken place I carelessly missed one. She soon became pregnant, and six weeks after confinement she called for examination to ascertain the effect of delivery on the cervix, and I then found the missing suture. It had caused no great trouble, and was in a very good state of preservation.

The pelvic pain or neuralgia which arises from cicatrices of the cervix and vagina is often very annoying, and calls for treatment. Marked relief follows after dividing the bands of cicatricial tissue. In two insane cases I have now in mind this treatment was the only means that could easily be employed, and the results were very satisfactory. One was a case of scar tissue of the cervix from the reckless use of nitrate of silver; the other had a number of cicatricial bands in the vagina resulting from gangrenous vaginitis occurring after scarlatina in girlhood.

Displacement of the uterus—i. e., prolapsus and versions—can be treated with good results, excepting when there are anatomical or functional imperfections of the perinæum. The displaced uterus can be readily restored and a pessary adjusted while the patient is anæsthetized. It is necessary to frequently examine such patients while wearing pessaries, because they may suffer without complaining.

The most important difficulty is encountered in the management of displacements in those having an imperfect perinæum. Pessaries or supports held in place by being fastened to the body can not be used, and on that account we are limited to intravaginal pessaries, which require the presence of the perinæum. To restore a lacerated perinæum would be easy, but to secure the after-treatment necessary to a good result is often difficult. Investigation of this subject among the insane has been very limited, but I am satisfied that in many cases the restlessness of such patients would render the use of the silver wire unsatisfactory. I believe that the use of silk would be a great improvement in these plastic operations among the insane. Attention is called to this subject as a field inviting experimentation.

Flexion of the uterus, in its various forms, gives rise to much suffering when the menstrual function continues, and dysmenorrhœa is a common result. In quite a number of patients with flexion there is amenorrhœa, and in these flexion alone is presumed to give no trouble. There is no reason for believing that a flexion unassociated with any other disease of the uterus would give rise to disturbance of the brain or nervous system in a patient who does not menstruate; so I have avoided local treatment, believing that nothing would be gained by anything that could be done. But when the menses recur, and are painful, the probabilities are that the flexion is the cause of the dysmenorrhœa, and it should, if possible, be relieved. Knowing how difficult flexions are to cure, when the circumstances are favorable, it need hardly be stated that the treatment of such deformities in the insane is often very unsatisfactory. The most daring gynecologist

would hesitate to use a stem pessary, or perform division of the cervix, in a patient who could not be well controlled during the after-treatment. In flexion of the cervix division might be practiced in patients not too violent and uncontrollable. As a rule, however, the treatment in such cases is limited to subduing any excessive irritability of the uterus, and securing a sufficient size of the canal by dilatation or incision, if necessary, and in cases of forward flexion of the body much might be gained by straightening the uterus and keeping it so, as far as possible, by means of Thomas's anteflexion pessary, or some similar instrument.

There are forms of dysmenorrhœa (not dependent upon flexion of the uterus or any known mechanical cause) that are presumed to arise from ovarian disease, or some abnormal condition of the nerves supplying the sexual organs. In these cases the local signs are negative, and the only true evidence of the painful menstruation is the fact that the insanity is aggravated at that time, and the patient may indicate by the position of the body, and by placing the hands over the lower portion of the abdomen, that the seat of suffering is in the pelvis. For cases of this kind I know of no special local treatment that is beneficial. Fortunately, this form of dysmenorrhœa is rare among the insane. The reason for this is that the tender and irritable uterus and ovaries are relieved, in some cases at least, upon the advent of insanity.

CHAPTER XXVII.

AFFECTIONS OF THE MAMMARY GLANDS.

Diseases of the mammæ belong, to a great extent, to the domain of surgery, but there are some of these, so far as treatment is concerned, that come under the care of the gynecologist. The mammary glands are sexual organs in the sense that they are concerned in reproduction, and are intimately related to the uterus and ovaries. This intimate relationship between the pelvic organs and the mammæ is seen in the influence of the former in causing diseases and functional disorders of the latter. In a less degree the mammary glands affect the other sexual organs. This is exemplified in the affect of nursing, in causing contraction of the uterus post partum, and in aiding involution.

The affections which come within the scope of the present work are certain forms of maldevelopment; occasional swellings, neuralgia, deranged secretion, and hyperplasia. I have given the latter name to an affection of the breasts which is not uncommon, and which has not been described so far as I know.

Anomalies of Development.—The development of the mammary glands depends upon the same influences as those which govern the development of the ovaries and uterus. This intimate relationship between the sexual organs is shown in the fact that anomalies of development of the mammæ are generally accompanied by malformations of the pelvic organs. In a case of total absence of the uterus Saxinger found both mammæ wanting. A number of cases are recorded in which the breasts remain the same as they are before puberty, and

the ovaries are imperfectly developed. Winckel has reported a case in which the right mamma was normal in size, but the left was not larger than that of a child. The pelvic organs were normal, Winckel states, but of course it is possible that the left ovary was defective. It is equally possible that the arrest of development of the left breast was caused by inflammation soon after birth (a common affection among infants), and the structures of the gland were so destroyed as to prevent further development.

Supernumerary mammary glands are occasionally seen. This anomaly of development appears to arise from a derangement or arrest of involution—not an arrest of development, but a polymazia and a lapsing toward a lower type. These views regarding the causation of anomalies of development are based upon the fact that the human female embryo contains the germs of five mammæ—two situated in the middle of each side of the thorax, one in each axilla, and one in the median line beneath the lower end of the sternum. This arrangement corresponds exactly with that of some of the lower animals. Gorre saw a woman with five mammæ of this primitive division. These anomalies are of interest chiefly in regard to causation, which appears to be of three forms: First, imperfect or arrested development of the ovaries and uterus; second, lapsing back to a lower type, a derangement of involution; and, third, diseases of the glands in embryo or soon after birth, which ends in destruction of the rudimentary gland.

Delayed and Imperfect Development.—There is delayed development of the mammæ in retarded puberty. When this delayed puberty is due to circumstances that can be overcome, the development of the mammæ goes on to completion without any special treatment. Premature development of the mammary glands is not very infrequent. The glands become well formed for some time before menstruation appears and before the general development is completed. This usually occurs in precocious girls in whom there is some undue congestion or deranged innervation of the sexual organs. It is

of value in helping to make a diagnosis of premature excitement of the sexual system.

Retracted Nipples.—The most important malformation of the breasts is the non-development of the nipples. This may involve both breasts or only one. The nipple does not, in well-marked cases, appear above the surface of the breasts, but is retracted so that there is a depression in place of the projection. This condition is simulated in stout girls by the adipose tissue pushing the skin out so that it rises to the level of the nipple. In those having rather short nipples (but not defective in any way) they are made to appear deformed by the adipose tissue as referred to. The causes of retraction or non-developed nipples are most frequently some inflammatory affection in infancy, which shortens the excretory milk ducts, and occasionally pressure from corsets worn during girlhood.

Treatment.—When the cause is inflammation in infancy there is not much hope of giving relief. A great deal, however, can be done at puberty by encouragement to prevent this arrest of development by proper clothing. In fact, puberty is the time to prevent maldevelopment and to aid in overcoming any imperfections that there may be in the structure of the mammæ. Girls are very often injured by wearing waists that are too small and compress the breast. Mothers are likely to neglect this matter. The waists should be made with room for the breasts to develop and grow, and if the nipple is defective, a ring pad should be made of wool or cotton and fastened inside of the waist so that all pressure will be made on the gland and the nipple be left free. If this fails, and the cases are seen later in life, efforts should be made during the latter months of the first gestation to bring out the nipple by cupping. A very small cupping glass or a breast pump should be used, but very great care is necessary in order not to do harm. Very little traction should be made—just enough to draw the nipple out, and not enough to cause congestion and injure the nipple. Frequent application, say once a day, is most useful.

Occasional Swellings.—The mammæ frequently swell and become somewhat tender. The swelling, as usually seen, is bilateral and due to congestion. In rare cases there may be œdema. There is a sense of fullness and tenderness; sometimes there is pain of a subacute character. As a rule, this affection comes at the menstrual period, and is almost always due to some derangement of the menstrual function, or some ovarian or uterine disease. Immediately after puberty and at the menopause it is often observed.

The diagnosis is easily made by the fact of its coming and going, in which it differs from other affections.

Treatment should be directed to the disease which causes the swelling of the breasts, and the success will depend upon the ability to cure the primary trouble—such as painful ovulation or menstruation or some organic disease of the pelvic organs. There is a form of enlargement of the breast which does not belong to the class of cases now under consideration, neither is it a hypertrophy, such as is described in works on this subject. It occurs in connection with hysteria. Dr. John C. Shaw has related, in the Brooklyn Medical Journal, April, 1893, a case of this kind from which I quote the following:

"L. H., aged eighteen; a well-developed, healthy-appearing young woman. Nothing positive is known of her family history except that her mother is of an exceedingly nervous temperament. She was married at the age of sixteen years. Nine months after her marriage her husband was suddenly killed in a railroad accident. In August, 1891, while engaged in a swimming match, she was seized with cramps and was carried out of the water by some one near at hand. Three weeks later she began to complain of sharp, shooting pain in the left breast, which she thinks was caused by an accidental blow when she was being rescued from the water. A few days after, she was seized with a convulsion; for twelve weeks subsequent, she had convulsions, on an average of two a week; and during this time the left breast grew larger and more painful. She was now admitted to the Long Island

College Hospital, where she says an opening was made into the breast and pus discharged.

"On April 5, 1892, she was admitted to the Kings County Hospital. Examination showed the left breast enlarged, appearing swollen, œdematous, and somewhat cyanotic; it is soft; there are no hardened parts; no evidence of tumor. There is also the same œdema of the left hand and forearm, and the same bluish color presented by the breast; these œdematous parts are cold to the touch. The breast is intensely hyperæsthetic; the slightest touch causes pain. This hyperæsthesia extends from a short distance below the insertion of the breast to the shoulder, also on the corresponding area on the back; it is confined entirely to the left side. There is anæsthesia of the anterior surface of the left arm and forearm. All her internal organs are perfectly healthy, and she is well nourished.

"When our patient presented herself we had no difficulty in making a diagnosis of hysteria with œdema, but in association with the œdema of the left upper extremity we also found a condition of the left mammary gland which we had not the least hesitancy in pronouncing a hysterical œdema and analogous to the œdema of the arm; we wished, however, to have the opinion of a physician who is more familiar with organic diseases of the female mammary gland than we are, in that way to positively exclude the presence of any organic disease; we therefore asked Dr. A. J. C. Skene to see her. His reply after examining her reads as follows:

"'The affection of the mammary gland is undoubtedly œdema. The most careful examination reveals no evidence of any other morbid condition. I feel that I can speak rather positively on this point. My examination was made with the greatest care, but not the slightest evidence could I find of any other known disease of the mammary gland.

"'There is another very interesting point connected with the case, and that is the absence of any disease whatsoever of the pelvic organs. In affections of the mammary gland in women that I have seen (excluding malignant disease and

acute mastitis) I have almost invariably found some ovarian or uterine disease, and I have taken it for granted that the mammary disease was due to reflex disturbances; but in this case there is certainly no disease of the sexual organs to which the mammary œdema could be attributed.

"'The œdema in this patient is not white, but bluish, a cyanotic appearance, and the temperature of the parts is lowered. We have a case of blue œdema. So far as we know, no case has been reported in which the œdema has been in the breast; it has always been confined to the extremities—either an arm or leg, most frequently the arm, and it is unilateral.'"

Derangements of the Secretions of the Mammæ.—Unnatural conditions of the secretion of the breasts is also a secondary affection. Most of the cases are caused by disease of the other organs of sex, but others are due evidently to abnormal states of the general organization.

Galactorrhœa is mentioned as an affection which occurs during lactation and generally soon after confinement. I limit my remarks to a secretion of milk when not nursing, which may be moderate or very profuse. This is a perverted function caused by some primary disease outside of the breasts themselves. The worst case of this kind that I have seen was a woman who had had several children. The last child had been weaned over one year before I saw her in consultation with her physician. She then had a free flow of a thin, watery milk which continued night and day. The patient had syphilis and was a nervous person, but had no disease of her sexual organs, so far as I could find out. Her physician had tried a great variety of remedies without effect. The subsequent history I never received. I recommended the local application of unguentum plumbi iodidi to the breasts and belladonna internally in doses that could be well borne. That treatment, combined with nux vomica, quinine, and iron, has helped in other cases of a milder character that have come under my observation. Sometimes benefit has been derived from compression, as recommended by Winckel.

Milk serum is often formed in the breasts along with darkening of the areola in uterine fibromata and ovarian tumors, and sometimes in chronic inflammations. The secretion is not, as a rule, very free, and is interesting to the physician only as an aid to diagnosis. If one is not aware of this secretion and the breast signs, pregnancy might be suspected, when ovarian or uterine neoplasms is the affection present.

In several aged women I have found a pinkish discharge from one breast which alarmed the patients, and the first case that I saw led me to suspect malignant disease, although there were no other signs of any such affection. The further history of all cases (except one now under my care) showed that there was no malignant disease present. All the cases that I have seen have been treated by local applications of tannin and glycerin, and internally with arsenic and iron in medium doses.

Mastodynia; Neuralgia of the Mammary Glands.—This affection is characterized by neuralgic pain, which recurs at regular or irregular intervals and is not attended with any structural change that can be distinguished. There is in some cases tenderness, which suggests that there might be something approaching inflammation. These pains have been attributed to some disorder of the sexual organs, and in this I agree to a certain extent. I have seen cases of neuralgia of the breast that appear during the course of some uterine or ovarian disease, functional or organic, and then disappear when the primary affections were relieved. This leaves barely room for doubt that the mammary pain was caused by reflex influences.

There is another class of cases that come under observation and that do not have any ovarian or uterine disease, either organic or functional, but do have derangement of sexual innervation. Sudden cessation of sexual intercourse which has been liberally and for a considerable time in practice will often be followed by mammary pain. Overindulgence gives rise to similar pain. In malaria, rheumatism, and hysteria, pain in the mammæ is not uncommon.

Treatment.—When the pain is caused by any disease of the pelvic organs, the only sure help comes from removing the cause. It is often necessary to relieve the pain while curing the primary trouble. Local anodynes should be used, belladonna, conium, and cocaine being the best to quiet pain. The two former may be used in the form of fluid extracts or with equal parts of glycerin applied on cotton. When due to malnutrition, tonics give relief; when due to sexual hyperæsthesia, exercise and bromides help.

Areolar Hyperplasia of the Mammary Glands.—I give the above name to a condition of the mammary glands that I have carefully studied clinically, but have not had an opportunity to investigate the pathological anatomy to an extent sufficient to enable me to feel sure that the name used is accurately descriptive and hence appropriate.

About sixteen years ago a maiden lady consulted me about a hard, irregular mass in her left breast. It was painful and tender. She had suffered for about two months from pain and tenderness, and more recently had noticed that there was an enlargement at the point of tenderness. She appeared to be over forty years of age, and was in fairly good health and menstruated regularly. The tumor was situated in the outer side of the gland, was quite hard and nodulated, and at one point there was a soft spot which appeared to contain fluid. Cancer was suspected, and surgeons then, as now, advised amputation when there was reason for believing the trouble was malignant. I removed the entire breast, and found in the mass two small cystic cavities. A pathologist examined the specimens and reported that there was an extraordinary development of the cellular tissue, that in places the blood-vessels and gland structure were atrophied, and that the cysts were dilated, milk ducts containing a fluid which appeared to be milk serum. There was no evidence of cancer, and the patient is living and well at this time.

Since then I have seen twenty-three cases with a clinical history and physical signs about the same as that given above, and all of them have recovered, excepting two that are now

under treatment and bid fair to recover. All these patients were fearful of having cancer; several of them came to be operated upon, but none required surgical treatment. About one half of the number had some uterine or ovarian disease.

One case is worthy of being recorded: A lady had cancer of the mammary and axillary glands. I operated, and the specimen was pronounced to be carcinoma by Dr. Frank Ferguson. The disease returned, and she died about two years afterward. One year after the operation the sister of the patient came to me and told me that she had a painful tumor in her breast, and that she had made up her mind to have it removed. This patient was forty-one years old and had prolapsus uteri. The tumor was an inch and a quarter in diameter, hard, irregular, nodulated, and quite tender. Taking into account the history of her sister's case, I was satisfied that the tumor was cancerous, and decided to operate, but, as it was not convenient to do so at that time, I put her under treatment and waited. The tumor did not grow, but, on the contrary, appeared to diminish and became less painful. The treatment was continued, and in less than a year it had become much smaller and gave no further trouble. It is now five years since I first saw her and she is quite well. There is still a hardened portion of the gland, but it shows no tendency to grow, and is neither painful nor tender.

Regarding the causation of this affection I am still in the dark. In about half the cases seen there was some affection of the sexual organs which might have caused the disease of the breasts, but in an equal number there was no local or constitutional disease. Most of these patients gave a history of having had a blow upon the breast, but not near enough to the point where the disease of the breast appeared to make sure that the cause was traumatic. The ages ranged from twenty-one to sixty years, so that age does not seem to have any causative relation to the affection.

Treatment.—Daily applications of equal parts of tincture of iodine, opium, and aconite until the skin becomes irritated, then rest; and when the irritation subsides fluid ex-

tract of conium is applied twice a day for three or four weeks. If the pain and tenderness persist, the first application is again used. Internally the bromide of arsenic in small doses is used for a month, and then iodide of iron if iron is indicated. If there is no anæmia, iodide of ammonium is used.

CHAPTER XXVIII.

THE UTERINE FIBROMATA.

It is to be regretted that the causes or conditions which give rise to fibroid neoplasms of the uterus are not by any means fully understood. It is known that certain races—the African, for example—and married sterile women, are more liable to these neoplasms than others, and that they appear most frequently between twenty and thirty-five years of age or thereabouts; and from these facts one is led to suppose that active nutrition of the sexual organs, with limited functional activity, favors the coming of these new growths of the uterus. However this may be, it is evident that the physician is almost powerless in removing the causes. I shall consider briefly the medical treatment of uterine fibromata.

A great revolution has taken place in the treatment of these growths within the last few years. In former times it was all medical; now it is almost wholly surgical. The only question among surgeons at the present time is whether operative interference should be relied upon wholly, or whether in certain cases electrolysis should be employed. Without stopping to discuss this important question in full, I may say that certain cases demand operative interference, and many others can be completely controlled by the use of electricity. But electrolysis as practiced in the treatment of fibroids of the uterus is a surgical procedure, in my opinion, and hence I do not feel called upon to discuss that method of treatment in this connection.

In spite of all the enthusiasm of surgeons, and the very satisfactory results obtained by surgical treatment, as prac-

ticed by the most judicious men, there are still many who do not require surgical treatment, the danger and sufferings not being sufficient to call for it, and some who refuse operative treatment, and still others who are so situated that they can not obtain the services of competent surgeons. Such cases, consequently, come under the care of the physician.

The medical treatment consists in removing the conditions which favor the growth of these fibroids. This, unfortunately, as before referred to, is exceedingly limited. If in a given case there is a pronounced sexual appetence and sterility, voluntary or involuntary, something may be done by judicious advice and the use of bromide of soda. Diet also is presumed to have some influence upon the growth of fibroids. A limited amount of animal food, or a partially vegetable diet, is said to be best. In fact, I believe some time ago a diet list was made out for cases of fibroids; but I have never been able to determine whether it was of the slightest value or not. I remember at the time I satisfied myself that the author of the diet evolved it out of his inner consciousness, upon some theory which he had regarding the nutrition of fibroids, and I am quite sure that no observations have ever been made in this country that would prove the influence of any certain kind of diet upon the growth of fibroids. In fact, one's lifetime is hardly long enough to make a sufficient number of observations to determine this point. It is rational to suppose, however, that a non-stimulating and frugal diet might be best adapted to this class of cases.

The great difficulty which arises from the presence of fibroids is menorrhagia and pressure upon neighboring organs. The excessive menstrual flow, of course, maintains a condition of anæmia and general weakness, and pressure occasionally gives rise to pain. The object of medical treatment, then, should be to relieve pain without the use of anodynes, if possible, and to control the menorrhagia. In regard to the relief of pain from pressure, postural treatment is the most effectual—that is to say, the patient should not

be permitted to stand or walk too long at a time, and she should assume the recumbent position, either upon the back or either side, whichever gives her the most relief. Sometimes the homemade, well-fitting abdominal supporter gives a certain amount of relief in large fibroids. The menorrhagia is to be controlled by ergot and hydrastis canadensis, either or both. The object in giving the ergot is to produce uterine contractions, and so lessen the circulation, and at the same time favor the natural cure of fibroids. The natural tendency of these fibroid growths is to be expelled from the uterine wall in which they are developed, either outward or inward—i. e., they are gradually forced into the uterine cavity, or else outward toward the abdominal cavity beneath the peritonæum.

Ergot has the most marked effect in controlling the menorrhagia in those cases in which the tumor inclines toward the cavity of the uterus. A number of preparations of ergot have been recommended. I have never found anything better than the fluid extract, when prepared by such reliable pharmacists as Dr. Squibb. It has been used by the mouth and also by hypodermic injection. At one time the hypodermic method was fashionable, and it was then believed to be the most efficient. I am satisfied in my own mind that it has no advantages over its administration by the stomach, except perhaps that in a large fibroid, and during the period of active hæmorrhage, the hypodermic will act more promptly and more efficaciously in the way of producing contractions, and consequently lessen the bleeding.

The great objection to ergot is that it is not well borne by the stomach in many cases, and that it is disagreeable to the taste; and yet this can usually be overcome by combining it with pleasant aromatics. Again, if long continued, it produces deleterious effects upon the blood-vessels elsewhere than in the uterus, and so it should not be given for a long time. This has driven me, of late years, to use hydrastis canadensis, the aqueous fluid extract. It appears to have nearly as much control over the hæmorrhage as ergot; and

as it can be continued for an indefinite length of time and in large doses, is, on the whole, the preferable remedy. It is not an agreeable preparation, given in the fluid extract, and so that has caused many to use the solid extract, or the active principle, hydrastine. Neither of these are as efficient as the aqueous fluid extract, and by combining this preparation with aromatics, such as tincture of cardamom or cinnamon water, it can usually be taken, and it has this advantage, that it nearly always agrees with the stomach. I have found some patients that after a time objected to it, and so I have used the fluid extract by the rectum, ten to fifteen drops, three times a day. Some are very sensitive to its action, and have pelvic pain if it is given in large doses long continued. Whenever this pain appears and is clearly traceable to this agent, the dose, of course, should be diminished.

Iodide of calcium is a remedy that has been highly spoken of in the treatment of fibroids. Two or three grains three times a day, given in water half an hour before meals, is said to have decided effect in controlling the growth of fibroids. This has led me to adopt the following plan: For a few days before the menstrual flow, during it, and for a few days after it subsides, I use the hydrastis; in the interval I use the iodide of calcium.

It occasionally happens that the menorrhagia is extremely great and does not yield to the treatment employed. The patient becomes so reduced that heart stimulants, such as digitalis and nux vomica, are necessary. In such instances complete rest should be insisted upon during the flow, and some relief is often obtained by using a warm (not hot) vaginal douche of acetic acid in solution. I use from two to four quarts of water, with an ounce of good cider vinegar to each quart. If this causes any smarting pain the quantity of vinegar can be reduced. As a matter of course, every means should be employed to maintain the health of the patient as near to the normal standard as possible, so that she may be the better able to bear her burden.

CHAPTER XXIX.

CANCER.

MALIGNANT disease of the uterus, ovaries, and mammæ frequently comes under the observation of the gynecologist; and although up to the present time surgical treatment has been almost exclusively adopted as the only means of battling with this form of disease, there are, however, certain points in the management of cancer which belong to the domain of medicine. All that pertains to the prevention of cancer, in so far as it is inherited or acquired by certain conditions, and the treatment in the earlier stages, come under the care of the physician.

In recent times pathologists have favored the idea that cancer is dependent upon a certain germ. When this comes to be better understood, it is possible that medical treatment may be sufficient to prevent or to cure this affection. But at the present time our knowledge of the disease appears to be limited to the fact that certain organizations are predisposed to cancer disease; and if it should be found in the future that the disease is due to a cancer germ, the fact will still remain that, in order that this germ may be effective in producing cancer, a certain kind of organization or a certain quality of tissue is favorable to the action of this germ. It is known that the tubercular bacilli (and the germ of cancer if there is one) require a certain kind of tissue to live upon, hence some enjoy an immunity from these maladies, while others are predisposed to them.

Some of the diseases due to specific germs attack all alike, the strong and the weak—typhoid fever, for example. It is

very different with such diseases as cancer. Those germs that require special tissue to live upon act locally. The other germs that attack all organizations are general in their action.

There are certain things that we know now which obtain almost invariably in cases that develop cancer — such, for example, as the fact, pointed out long ago by Virchow, that the pulmonary artery is abnormally small in those who die of cancer. I have kept a record of a very large number of cases of cancer of the uterus, mammary glands, and ovaries, and I think I can say that, without exception, I have found the pulmonary circulation defective, and consequently respiration and blood aëration insufficient to a certain degree.

The vast majority of subjects, also, have been stout, with a preponderance of adipose and cellular tissue. In fact, they have been somewhat chlorotic as a rule, and of the lymphatic temperament. In short, while digestion and assimilation have been normal, disassimilation, disintegration, and elimination have been imperfect or sluggish. It would seem, therefore, that this condition of organization predisposed to malignant disease; and if such is the fact, then much can be done in the way of development and general management in early life to overcome this peculiar tendency to disease. All that was said in discussing the management of chlorotic and phlegmatic girls would apply with equal force to the prevention of cancer. I need not, then, in this connection, dwell upon that part of the subject.

The condition of the organization at, toward, or immediately after the menopause—the time at which malignant disease usually shows itself—will now be considered. I am quite confident that at this time much can be done to prevent the appearance of cancer by improving the general health and the condition of the tissues.

The diagnosis of this condition is based upon the special temperament, usually phlegmatic, somewhat chlorotic, it may be, with small circulatory apparatus, at any rate so far as the pulmonary artery is concerned, and hence the imperfect res-

piration and blood aëration referred to, the superabundance of adipose and cellular tissue, as shown by the general appearance of the patient, with sluggish excretion or elimination, indicated chiefly by renal and hepatic torpor. These conditions of ultimate nutrition are very often spoken of as lithæmia, and hence I might say that lithæmic patients at this period of life are predisposed to cancer.

It will be seen that this condition may be largely due to inherited temperament and general organization, and yet to a large extent it may be acquired. Some of the modifications of nutrition which have been referred to in discussing the menopause clearly eventuate in this predisposition to malignant disease.

Dr. Arthur W. Johnston (in whose opinion I have profound confidence) believes that the chief cause of carcinoma is failure of the trophic nerves, the failure being brought about by some nerve strain or great sorrow. I accept without hesitation the theory regarding the causative relation of the trophic nerves to cancer, but my clinical experience makes me doubt if nerve strain is the primary cause. I incline to the opinion that failure of the trophic nerves occurs more readily in those organizations which I have described as predisposed to malignant disease. But whether the nerve strain is a necessary element in the causation of cancer or not, the trophic nerves, which preside over all tissue changes, certainly play an important part in the ætiology of cancer, and have a certain bearing on the question of treatment.

Treatment.—The indications in this condition are to improve the character of the tissues, first by diet, and then by every possible means which can favor ultimate nutrition by promoting the depleting processes, or disintegration and elimination.

In regard to the matter of diet, I am confident that all the articles of food and drink which retard tissue waste or elimination of worn-out tissues, such as alcohol (especially in the form of beer), tea, and coffee, should be avoided. Certain observations that I have made lead to the conclusion that

beer-drinking people, and to a less extent wine-drinkers, are more subject to cancer. This is an additional reason for my urging the restricted use of such articles through life, and especially at the time when cancer is likely to appear. The excessive use of animal food, while it may not in itself predispose to malignant disease, does so when it is used in excess in connection with alcohol; and those who take sparingly of animal food, I find, can bear a larger amount of alcohol with less injurious effects. And so, in a given case, if I found that they took animal food sparingly, but alcohol in considerable quantity, I should continue the alcohol but diminish the quantity. It is, I presume, on account of this effect of animal food and alcohol in producing a tendency to cancer that milk diet has obtained a considerable reputation in the management of malignant disease.

Next to diet, every means should be employed to regulate the renewal of tissue; and, first, by getting clear of waste material. Diet having been properly adjusted, and food given in quantities that can be easily and thoroughly digested, will insure the best possible supply of tissue. Then if, by the means at command, free disintegration and elimination can be secured, much will be accomplished toward preventing the appearance of cancer. The bowels should be kept regular, and yet not unnecessarily free. The kidneys should be made to do their whole duty, and the intestinal secretions, including hepatic secretion, should be carefully looked after. The skin also requires attention; and here I believe the Turkish bath is of value, especially to those who have not sufficient exercise to induce free, healthful perspiration. A Turkish bath once or twice a week, with thorough massage, will greatly improve the ultimate nutrition. Exercise should be carefully regulated. It is a rare thing to see cancer in an active person who does not carry a superabundance of adipose tissue, and who takes a sufficient amount of muscular exercise, and yet not too much. If diet, exercise, and eliminating agents be employed to excess, so that the renewal of tissue is insufficient, and the patient becomes debilitated and suffers from lack of

nutritive supply, the tendency to malignant disease will be favored.

Care must always be taken not to overdo the eliminating process. The balance between waste and repair should be maintained as nearly perfect as possible, the great object being to secure complete ultimate nutrition, so that the tissues may not become too old and worn out before they are broken down and thrown off. I am not sure that I will be thoroughly understood when I speak of old tissues, but I apply the term to a condition in which the process of waste and repair is retarded, and the tissues are not broken down and thrown off after they have served their purpose. That is what I mean, and that is the condition which I believe favors the appearance of cancer, and the chief thing to be overcome by treatment directed to prevent it. Dr. Johnston's views regarding causation suggest the necessity for the use of agents that may improve the condition of the nervous system. This, of course, is largely accomplished through improvement of the general nutrition, but nerve tonics, and sedatives if needed, should be employed.

This leads up to the consideration of medicinal agents which are supposed to have some influence on the ultimate nutrition, and which have been used in the past, in the hope of preventing cancer or of arresting its progress when it has manifested itself in any location.

A number of remedies have been employed in the past, and we may say of most of them that they have been weighed in the balance and found wanting. At one time condurango, Chian turpentine, and several others, have been lauded for their curative power in cancer, but they have been found, if not useless, almost so. Those that are used most at the present day, and which still claim some confidence, are prepared chalk and arsenic.

In regard to the chalk, which was first used in the form of calcined oyster shells, given in powders, ten to twenty grains, three times a day, there were several theories regarding its action, but whether they were correct or not is unknown.

From personal experience I am unable to say that this agent is reliable. As it is a harmless article, I can see no objection to using it; but I would rely far more upon arsenic. Arsenic has a decided influence upon ultimate nutrition, especially of the skin and mucous membranes; and as cancer usually makes its appearance in those tissues, anything that can improve their nutrition must be of some benefit. Such is the fact, based upon the therapeutic action of arsenic, and the same thing is observed clinically. On this account I have employed this remedy in the management of the conditions which I believe predispose to cancer and in cases where cancer actually had appeared, and with benefit. On the same principle I have employed mercury and iodine, a favorite prescription being small doses of chloride of mercury with arsenic, continued for a time and then changed for iodine and arsenic. Small doses of the latter, and also of the mercury, should be employed, as it is a long-continued action which gives the result.

These are the remedies that at the present time are most efficacious, and I believe that if persistently continued, and if begun early in the course of the disease, but more especially if employed when there is an apparent tendency to the disease, they are potential preventives—at any rate, the best there are. When cancer is present, I need hardly say that surgical treatment is indicated, and is the only treatment that promises any relief.

Within the past few years much has been said with reference to the effect of pyoctanin, an aniline preparation. This, I am satisfied, is of some value in arresting the progress of the disease when applied locally, but this belongs to the domain of surgery. What effect it may have when given internally is not decided.

A word may be said regarding the treatment of cancer by local applications in the way of plasters and caustics, and so on. This, of course, is surgical treatment, and the most barbarous kind of surgery, and so nothing further need be said on that subject.

It sometimes happens that, after the surgeon has done his best for the relief of malignant disease, his efforts fail, and the patient falls into the hands of the physician in her last days. There is only one word to say on that subject. Under these circumstances the physician's first and only duty is to give relief and add to the comfort of the patient as far as possible. Opium is the agent which alone can do this, and I believe in the free use of it in the management of such cases, doses sufficient to relieve pain. I may add that I believe that not only does opium relieve pain in cancer, but it retards the progress of the disease. I have an idea which I hardly dare express, and that is, that the habitual use of opium prevents cancer to a limited extent. If that is a fact, then the use of opium in the treatment of cancer certainly accomplishes what I have long thought it did, and that is, to retard the progress of the disease.

All that has been said in this connection applies equally to cancer of the uterus, ovaries, or mammary glands, which covers the whole field of the gynecologist.

CHAPTER XXX.

UNNATURAL HABITS.

The Invalid Habit.—A singular perversion of life, mental and physical, is seen among women who insist upon being invalids while there is nothing discoverable the matter with them. They constitute a class very distinct from hysteria, neurasthenia, and fancied ailments such as have been alluded to under the head of introspection.

Those who have too much time and money and few interests in the world are the most predisposed to this affection. Disappointed maids and "spoiled" wives form the largest number.

They complain either of strange nerve symptoms or obscure pelvic pains, which incapacitate them for any kind of mental or physical work. The diagnosis is difficult, owing to the fact that they have learned how to give minute descriptions of certain symptoms which they imagine they have. As a rule they have suffered from some real affection which they cling to long after recovery. The only derangement usually found is the lax, soft tissues which come from disuse. The nerves ache and the muscles also, when called upon to act, and the suffering which follows any effort gives an excuse for persisting in inactivity. In time, by careful exclusion, frequent examinations and careful watching, the diagnosis can be definitely made. The causes are twofold—either overtreatment of slight affections of the pelvic organs, or unsuitable treatment of trivial affections of the nutritive and nervous systems. All the cases that I have seen have begun with some uterine or ovarian disease, for which they have

been "treated to death," as the common saying goes. Owing to the oversupply of medical men in this country, there are to be found those who are ready to indulge patients in the dissipation of invalidism; this leads up to incurable imaginary ills.

The rest-cure, with forced feeding, so often employed in cases that do not require it, is responsible for many examples of the invalid habit. In many cases that I have seen—hysteria, nervous exhaustion, and neurasthenia—patients have undergone this plan of treatment and come out of it fat, full-blooded, but more helpless and useless than before undertaking treatment at all.

Treatment.—Such patients, having been long treated as invalids, do not like to be told the truth—that there is nothing the matter with them. Some cases that I have seen have come from perfectly honest, capable practitioners, who have told them that they did not require treatment. This disappoints them and they seek other aid. I have found it necessary to put them under training after having gained their confidence, not by deceiving, but by taking sufficient interest in their troubles to show them the true nature of their condition. It is well, if possible, to convince such that the real trouble is the invalid habit which has to be broken up by proper treatment. Those who from long-continued mental depression and inactivity suffer from malnutrition and neuralgic pain, real as well as imaginary, require general treatment, but such sufferers and those who are as well nourished as they can be under the circumstances require systematic, gradually increasing mental and physical exercise. Active exercise is that which is required. Massage is to-day too often used in such cases, for it is worse than useless in the condition under consideration. Massage and passive exercise are useful to improve nutrition and retain strength for a time, but the effect is limited. The nerve force and muscular power can only be restored by one's own efforts. Massage and rubbing aid in obtaining rest and restoration, but can not do what voluntary exercise does. Many of the

worst cases that have come under my observation have had the rest-cure (including massage, electricity, and all that an attendant can do for a patient) without relief.

The invalid habit should be treated with the "occupation and exercise cure." This should be regulated with great care, the rule being to find out how much the mind and body can do without fatigue. The limit of endurance should be found. This is very difficult, owing to the fact that the patient's judgment, being perverted, can not be depended upon, at the beginning of the treatment at least. The directions must be given to the nurse, and the effects noted by the physician.

At first, mental occupation and physical exercise suitable to the condition should be taken for a short time; in bad cases all that the patient can be induced to do is generally right. The moment there is any excitement (indicating fatigue) shown by the pulse or in breathing, the work should be stopped. Rest should be given until the feeling of fatigue passes off, and occupation should at once be resumed. If the patient is not disposed to rest, and if she does rest, but without relief from fatigue, the exercise and occupation have been too long continued and the next effort should be shorter. The mental exercise should consist in reading or having some one read to the patient, for a very short time at first and at several stated times each day, and in conversation with intelligent friends or attendants on any subject of interest not connected with the patient's own condition. Gymnastic exercise should be taken, at first in the reclining position, according to the method described under the head of muscular exercise in general therapeutics.

The Opium Habit.—This subject is taken up here for several very good reasons. In the practice of gynecology one sees as many, perhaps more, cases of the opium habit as in any other branch of medicine, and—I say it reluctantly—gynecologists are responsible for making opium *habitués* occasionally. A volume could easily be filled with the history of cases of dysmenorrhœa and pelvic inflammations that have

been treated with opium until the habit has been established. The blame has too often been laid at the door of general practitioners. They have been charged with giving opium to relieve pain and suffering, when appropriate treatment would have been sufficient without the narcotic. Though there may be some justice as well as truth in this, I know that gynecologists have as much, or more, to answer for in this respect as the general practitioner.

I have found that opium after operations is often so freely given and its use so long continued that the habit is fixed and kept up after the patient is dismissed as cured. In my own practice I find it necessary to employ opium in the treatment of painful affections and after certain operations; and it is often difficult to wean patients from the influence of the drug after the need for it is gone; but I invariably see to it that the use of opium is given up before the case is permitted to pass from under observation. If this rule were observed, and if greater care were excercised by doctors in the use of opium, there would be fewer *habitués*. There are women who use opium without any excuse in the way of physical suffering, but the fact remains, as I have stated it, that doctors of medicine have been in the past guilty to a large degree, though without intent.

The great object of the physician should be to use opium with the idea constantly in his mind that it is a dangerous thing, and if he requires to employ it for a long time in any case he should see that it is given up before dismissing such patients. If he fails in this he is responsible. The effect of opium on the sexual organs in women is peculiar and distinct; and this must be clearly understood before one can comprehend how easy it is for women to acquire the habit and how hard it is for them to abandon it.

It has been claimed that the difficulty in curing women of the opium habit was wholly due to their inferior will power. This I am sure is a grave error. Women bear pain and suffering better, and are more capable of self-denial in many respects, than men; and hence they would be easier to cure

were it not for the fact that they suffer from many more diseases of their sexual organs which require opium for their treatment. It is thus most difficult to tell when the necessity for opium arising from physical suffering is present or absent.

The chief effects of opium on the sexual organs are, first, to quiet nervous irritability and hyperæsthesia; next, to relieve congestion.

Opium, as is readily known, is the most available remedy to control the initial stage of acute inflammation, and also to relieve the suffering in chronic inflammations. So long, then, as there is any inflammatory condition of the pelvic organs, there are indications for the use of opium. In that functional derangement—excessive sexual appetence—opium in large and continued doses gives far more and certain relief than the bromides. This I know from clinical experience. I have the testimony of one of the most perfect types of women—mentally, physically, and morally—that I have ever seen. Her fine mind was cultivated to the highest degree; but, owing to circumstances in early life, her sexual proclivities were developed to an extraordinary degree, and she was obliged to live a single life. On one occasion, when she was suffering an unusual amount of physiological pelvic congestion, her physician gave her a dose of opium. This produced relief, first by quieting her nervous system so that she could endure physical discomfort, and, secondly, by quelling pelvic congestion and sexual hyperæsthesia. This was the beginning of a course which in a short time ended in the "drug habit."

While she continued her opium she was absolutely free from unsatisfied sexual craving, yet knew full well that opium was objectionable; but felt as if it improved her so much, morally as well as physically, that she continued it.

Later, when she came under my care, I learned that much of her history. She told me, too, that all other narcotics had been tried in hopes that opium could be given up, but that they all rather aggravated than calmed her sexual disturb-

ances. There was, however, one exception. Very large doses of bromide and camphor helped her; but the doses needed could not be borne, because they gave rise to constitutional disturbances that were quite alarming. The evidence from such an intelligent and highly moral patient enabled me to place the proper value upon like testimony which I had often obtained from others.

After improving this lady's general health I was able to help her to give up the habit. She remained in good health, and the sexual disturbances did not reappear, a fortunate circumstance which I least expected.

Another effect of this drug is to induce amenorrhœa. I have seen the menses, absent five and a half years, return within a month after total abandonment of the morphine habit, with the duration and amount of flow that mark the menstruation of a healthy young girl. Amenorrhœa is brought about by the influence of the drug upon both innervation and circulation. In disease it diminishes the inflammatory condition, and in health so lowers tone that the normal functions are suspended.

I have had an opportunity of examining a large number of *habitués*, some in my own practice, others sent to me by Dr. Matteson—the highest authority in this country on treatment of the drug habits—and in all of them I have found that the physical condition corresponded to the modification of function. All the pelvic organs and tissues were anæmic and in a state of malnutrition—a condition somewhat resembling that occurring after the menopause. Hence it may readily be seen that the first step is to make sure there are no diseases of the pelvic organs which actually require attention before abandoning the drug.

To make a diagnosis is exceedingly difficult, because the testimony of the patients is unreliable. They have pain when the opium is withdrawn, or when it is "time to have the drug"—and local pain at that; hence the point is to determine whether this is the call of a craving nerve or a pain due to an actual morbid state. The physical signs obtained by

temperature, touch, and inspection are the only things to rely upon. The temperature rises when the drug is withdrawn and falls when it is given again. I have seen sudden stoppage push the temperature to 103·5° F., and this fell to normal promptly when a dose of opium was given. Severe neuralgic pain accompanies this rise of temperature.

In no disease of the sexual organs is there such temperature variation as occurs in withholding opium and giving it again to its *habitués;* hence the value of the clinical thermometer in making a diagnosis.

The *treatment* of the opium habit is difficult to carry out in private practice. I am so fully satisfied of that fact that I hope the time will come when this and the alcohol and cocaine habits will be considered as a mental aberration, justifying commitment to an institution for treatment. This seems to be especially necessary in this country, for our Western races do not use opium as the Orientals do. When the former once begin they go on from bad to worse, having no power to keep from increasing the quantity. To send these cases to institutions for treatment is the proper thing, but the physician finds this impracticable in all cases; therefore he should be prepared to do the best under the circumstances. Those who have not lost all sense of right and will power, who strongly desire to recover, can be managed at home; but it is most difficult to discover those cases. Nearly all profess a desire to give up the drug, but it is an insincere profession, and shows itself in its true colors when the dose is reduced until it fails to satisfy the craving.

Having determined that there is no condition of the pelvic organs causing pain and necessitating the use of opium, the next thing is to obtain perfect control of the patient and her supply of opium. This can be done most easily by placing her in an institution; but this is not at all times possible, as already stated. The next best thing is to obtain an attendant or nurse who can be relied upon to honestly follow out the directions, which is often the most difficult of all. Relations, friends, and sometimes nurses will be deceived or per-

mit themselves to yield to the wishes of the patient, whose cunning, cleverness, and lack of moral sense often enables her to demoralize the attendants.

There are two methods of giving up the use of the drug: one the abrupt or immediate, and the other the gradual. The latter I believe to be the only rational and safe method. Having decided upon the quantity to be taken daily by the patient and the size and frequency of the dose at each time, the reduction can be begun. The same method of administration should be continued, only lessening each dose a very little, but in a definite quantity. The amount given during the day should be reduced, while the last dose at night should continue the same. I presume that if it has been used hypodermically, that method of administration should be employed, but in diminishing doses, and so in regard to any form of the drug and way of giving it.

Changing the form or preparation of the opium is highly spoken of by some. Dr. Matteson strongly commends the use of codeine hypodermically in place of the opium or morphine.

The general nutrition of the *habitué* is never good as a rule, and is likely to become much worse when the quantity of opium is reduced. This requires that every effort should be made to improve the appetite and digestion. During the weaning process the patient becomes extremely nervous, restless, and sleepless. Some relief from these symptoms may be obtained by large doses of cannabis Indica, lupuline, camphor, valerian, and that class of remedies. To secure sleep the cannabis Indica is the best of the above-named drugs, though the coal-tar products are also of use, and, when they are well borne, may be employed. All these agents are only to be used to let the patient down more easily, just as stimulants and coffee contribute to the relief of the patient; but such remedies must be used with care and should be diminished in dose. There is always danger of changing one drug habit for another. Reducing the dose is sometimes rather easy, but the giving it up entirely is generally a hard strug-

gle. When the drug is finally abandoned, the patient must still be watched with equal care, as there is danger of relapse for months after the drug is wholly given up.

Much might be said about the cocaine and alcohol habits, but the management of such cases is the same in principle as in opium *habitués*. I may say that the alcohol habit is seldom developed from the suffering incident to uterine disease, and in this respect differs greatly from the opium habit. Nearly all the cases that I have seen of the alcohol addiction came from heredity or perverted social life common to both sexes.

CHAPTER XXXI.

DISEASES OF THE URINARY ORGANS.

The majority of diseases of the urinary organs are of such a nature that they require surgical treatment, therefore this whole subject has been included in the domain of surgery. There are, however, many affections which naturally come under the care of the physician, who can manage them without the aid of surgery. It is therefore altogether proper that such urethro-vesical affections should be treated of in this work. I am the more desirous of taking up the subject in this connection since I have frequently observed, that many diseases of the urethra and bladder in women that fall into the hands of the gynecologist are subjected to local treatment when they do not require it—that is to say, in a large class of acute and functional diseases better results are obtained by medical than by surgical treatment.

Function of the Bladder.—In discussing this subject, it is taken for granted that the anatomy of the urinary organs is understood. A word or two only will be given regarding the nerve supply, to call the subject to mind.

The bladder receives its nerve supply partly from the mesenteric ganglia of the sympathetic and partly from the lumbar portion of the spinal cord. It has therefore nerve filaments from both the cerebro-spinal and sympathetic systems. The sphincter vesicæ is, in health, in a state of tonic contraction which results in retaining the urine in the bladder. This act is entirely involuntary and unconscious, and is performed in a perfect manner both during the waking and sleeping hours. When it is desired to evacuate the bladder,

this sphincter is relaxed by an act of the will conveyed through the cerebro-spinal fibers; but this relaxation once accomplished, the further act by which the organ is emptied is performed without the intervention of the will. The experiments of Kupressow demonstrate conclusively that the nerve center which presides over contraction and relaxation of the sphincter vesicæ is located in the lumbar region of the spinal cord; and it may be accepted that (with other functions of a protective nature) the spinal cord maintains the normal action of the urinary organ in this respect.

There are three factors in the functions of the bladder: first, the process by which it is filled; next, the act of retaining the urine by closure of the neck of the bladder; and, lastly, evacuation. These will be considered in order.

The bladder acts as a reservoir for the urine, and at proper intervals expels it. The filling of the organ with urine is a slow and gradual process, the fluid entering it from the ureters drop by drop, or in a very small stream. As it enlarges it does so in the direction of least resistance—viz., laterally and superiorly. The lateral being its longest diameter, it enlarges first in that direction, until after a time a limit is set by the bony pelvic boundaries, when it rises from the pelvis somewhat, thus escaping from the pressure below. This movement of the bladder is facilitated by its serous surface gliding easily over that of the adjacent organs.

There has been considerable discussion among different authors as to whether closure of the vesico-urethral orifice is a voluntary or an involuntary act. Witte and Rosenthal maintain that the closure is due to "tonicity from nerve force," which resists the urine pressure. Kupressow holds the same view, basing his opinion on a series of experiments which he made, and further maintains that the sphincter vesicæ is at the neck of the bladder to eject the urine completely out of the urethra, in place of standing guard and holding the vesical outlet closed. By others it is claimed that this musculo-elastic ring hinders the entrance of urine into the urethra, but that the tension of the bladder walls when the organ is

filled overbalances this elasticity, and a drop of urine escaping into the urethra brings the necessity for the urination to the senses, and the act then becomes a voluntary one.

The act of emptying the bladder is a very important and interesting process, and is not so simple as might at first be imagined. As the organ has three openings and is emptied by the concentric contraction of its muscular coat, there is during urination a tendency to regurgitation or backward pressure of the fluid into the ureters. The backward flow is effectually prevented by a very complete and interesting arrangement. The protection is threefold: First, by the oblique direction that the ureters take in piercing the vesical wall. Second, by the two muscular slips that pass from the sphincter vesicæ to the insertions of the ureters. As the bladder gradually fills, these slips are tightly drawn, and thus partially or wholly close the ureteric orifices.

Moreover, it may be presumed that as these muscular fasciculi have their origin in the vesical neck, they act most vigorously during urination, when the bladder pressure tends to cause regurgitation into the ureters. Their greatest use is, in all probability, during the act of micturition. This view is borne out by the fact that these little muscles are in a rudimentary condition in the female, the urethra being shorter and the force necessary to empty the bladder much less than in the male; and, further, by the well-known fact that when the hypertrophy of the muscular walls of the female bladder does occur, these fasciculi are proportionately enlarged. Third, by a ligamentous band, not described in the text-books of anatomy, which runs from one ureteric opening to the other, inclosing their vesical ends, and known as the inter-ureteric ligament. Its mode of action is this: As the bladder gradually fills, the openings of the ureters are carried farther apart, and with them the ends of the ligament. Being elastic, it yields to a certain extent, and after a time, being able to yield no more, pulls upon both openings, closing them more or less completely. During urination the tension of the ligament gradually decreases, and then the mus-

cular fasciculi and the oblique direction in which the ureters enter the bladder come into play, the ligament being of use only during filling and distention.

A healthy woman urinates from four to six times in every twenty-four hours, and passes in all from thirty-five to sixty ounces of urine, the average being about forty-five ounces. The amount passed varies much with the season of the year, more being passed in winter than in summer; it varies also with the amount of fluid ingesta, rest, and exercise. Neither limpid nor concentrated urine is well borne by the bladder.

The pressure of the urine in the bladder being of importance in both health and disease, I deem it advisable to give here the results of some experiments by Schaltz, Odelbrecht, Hegar, and Dubois. These experiments were made with the manometer, an instrument which by means of a column of mercury may be adapted to register the exact pressure in the bladder.

They found the pressure to be from twelve to sixteen inches while standing; in the recumbent posture it was only from four to six inches. The pressure in the recumbent position Dubois believed to be due not to visceral pressure from above, but to the natural tonicity of the distended organ; for in the cadaver, after removing the other viscera, the pressure in the bladder indicated four inches, plainly due to the elasticity of the organ itself. The same has been observed in cystocele, in which the visceral pressure is absent.

The pressure is about the same in both sexes and at all ages. It was found to rise from one half to one inch with each inspiration, and to fall about the same with each expiration. In laughing, coughing, etc., it rose as high as from twenty to sixty inches. In diseases of the spinal cord, such as myelitis, and after injuries to the vertebræ, Dubois found a marked decrease in bladder pressure.

These curious observations on the varying degrees of pressure arising from change of posture are not without value. They help one to understand why, in some diseases of the bladder, patients should maintain the recumbent position.

There are many conflicting opinions regarding the power of absorption possessed by the bladder. I have examined carefully all the evidence on this subject, and have come to the conclusion that the bladder is not capable of absorbing anything, or but very little, unless its epithelial surface is displaced or destroyed. When abrasion occurs, absorption is rapid and its effects marked. The fact that the mucous membrane of the bladder is able to absorb liquids after erosion of its epithelium throws much light on the cause of some of those peculiar constitutional symptoms accompanying chronic cystitis, and known by some authors as ammoniæmia.

The laws regulating the function of the bladder may be violated in several ways. In a partly voluntary way the evacuation of the bladder may be neglected and overdistention permitted with its evil results. This retention is more often the result of accident or preceding diseases. Too frequent urination and incontinence, partial or complete, lead up to contraction of the bladder and other additional well-defined states.

If from any cause the bladder is not emptied at the proper time, the organ is injured by overdistention, and serious results may follow if the retention continues; although the bladder is too full to receive any more urine, the kidneys continue to secrete until not only the bladder, but also the ureters, renal pelves, and kidney tubes become distended. When the pressure on the urinary side of the Malpighian tuft equals that of the blood-stream in the glomerulus, secretion of urine at once ceases, and there is a mechanical suppression. After death from such cause the bladder, ureters, and renal pelves are found to be greatly distended, and the kidney pale, of a bluish, pearly color in the cortex, and oozing urine from the cut surface.

Hygiene of the Urinary Organs.—Women are noted for neglecting the urinary organs. It has been clearly brought out, in describing the function of the bladder, that regularity in evacuating it is a necessity. This physiological law is sometimes unheeded by women. They often resist the desire to

urinate, and thereby give rise to trouble. Many of the functional disturbances and organic diseases can be traced to that bad habit of overdistending the bladder. The kidneys are also injured in the same way. At any rate, I have held that opinion, and it appears reasonable when the effect of overdistending the bladder is considered.

Women are often placed in a position while traveling or in company where it is very inconvenient to attend to their natural requirements, and rather than be considered rude or immodest they suffer. The result is to render the bladder at first irritable and hyperæmic and then to cause catarrh. Prolapsus of the bladder is favored by this overdistention. Sudden changes from cold to heat, or *vice versa*, are injurious, not from "catching cold which settles in the bladder," as is often stated, but by suddenly changing the character of the urine, so that it becomes irritating. Cold may aid in causing irritation by producing congestion, but sudden changes in the quantity and quality of the urine are the chief troubles.

The influence of the nervous and nutritive systems upon the urinary organs is, of course, very intimate and potential, hence any disturbance of the one must act unfavorably upon the other. Alcohol and narcotics used in excess are very injurious, opium being as objectionable as anything. Food of certain kinds—i. e., animal food—should be used sparingly. The skin should be especially cared for, because the kidneys and skin co-operate to a great extent. Cleanliness of the external genital organs is necessary at all periods, especially in early life and in old age. During the period of active functional life most women take ordinary care, but in childhood and old age there is frequently great neglect. Vulvitis often comes from want of care in this respect, and the inflammation of the vulva extends to the urethra and in rare cases to the bladder. This is true in simple vulvitis, though not in so certain a degree as in specific vulvitis. In short, good general hygienic conditions are as necessary to the welfare of the urinary organs as to the general health.

CHAPTER XXXII.

DISEASES OF THE BLADDER AND URETHRA.

FUNCTIONAL DISEASES OF THE BLADDER.

CONSIDERABLE time and space will be occupied with the functional diseases of the urinary organs, for the reason that women suffer very much from these disorders—far more so than men. From my observation I have concluded that women are as prone to functional affections of the bladder as to disease of the uterus.

The rule among pathologists appears to be, to class under the head of functional diseases all those in which no lesion of structure is discoverable in the organs concerned. Although still following this rule, the progress in diagnosis during the past few years has weeded out many of the so-called functional effections; and as this knowledge advances, and new and efficient means for observation and study arise, many more will be rooted out, thus doing away with much of the vagueness and uncertainty in which this class of affections are shrouded. But even with the improved facilities for diagnosis at our command, there are still many diseases in this list. Owing to the obscurity at present surrounding the subject of reflex or sympathetic disorders—i. e., the abnormal condition of an organ or organs, near or distant, affecting the function or nutrition of other organs—we are obliged to put these affections in this class also. The functional and organic diseases of the urinary organs are intimately related, and the derangement of function depends upon such diverse causes that a classification and arrangement, though difficult, are required, and hence an effort will be made to furnish one. I have adopted the following arrangement:

Functional derangements caused by—First. Certain peculiarities and imperfections of local innervation of the bladder and urethra; Second. Caused by diseases and derangements of the general nervous system; Third. Due to diseases of the nutritive system, including certain toxic conditions; and, Fourth. Caused by diseases of the other pelvic organs.

Examples of the first class are seen in irritable bladder, manifested in some cases by frequent urination and in others by incontinence.

Hysteria and diseases of the brain and spinal cord give typical examples of the second class.

The third class is illustrated in malarial and eruptive fevers, excrementitious plethora, and other constitutional diseases.

Cases of the fourth class are seen in ovaritis, metritis, pelvic peritonitis, and displacements of the uterus.

These are the functional diseases which generally come under the care of the physician. There are also certain acute diseases, such as acute cystitis and urethritis, which are managed best by medical treatment.

In this arrangement of the subject, although a number of structural diseases are considered, they all stand in a causative relation to the disturbed action of the bladder, the latter being free from any organic lesion, and only disturbed in the discharge of its duty by influences outside of itself.

Before discussing these functional disorders in detail it will be necessary to fix clearly in mind their various manifestations. These are: frequent urination, or polyuria; difficult urination and retention, or ischuria; painful urination, or dysuria; pain after urination, or vesical tenesmus; and incontinence of urine, or enuresis. These deranged actions may also occur in organic diseases of the bladder as well as in the four classes of functional derangements at present under consideration.

The examination and diagnosis of cases of functional diseases of the urinary organs call for brief mention here. The method which I have followed most successfully is, first to

obtain the symptoms and determine from these the class of functional derangements to which the case in question belongs. The next step is to determine whether the bladder or urethra is involved, or if the trouble is due to conditions of the general organization. This question is settled by exclusion, if there is no disease of the general organization to account for the affection of the urinary organs. The urine is examined, and that either excludes or detects disease of the urinary organs. By pursuing this method, a diagnosis can be easily and correctly made in the majority of cases.

Urethro-vesical Neuroses.—By this term I refer to purely nervous affections of this organ. They are rather rare, it is true, but there is no doubt that they do exist, for there are certain cases that seem to depend on no other known pathological lesion. The books state that vesical neuralgia is of this class. It is known by a variety of names, each taking as its keynote some peculiar manifestation or symptom, as irritable bladder, cystospasm, cystoplegia, and neuralgia vesicæ.

The term irritability so commonly used in speaking of the healthy organ must not be confounded with the condition known as irritable bladder. The former refers to a certain peculiarity that the viscus possesses, by means of which it is able to respond to certain stimuli, while the latter refers to an abnormal condition of sensation—viz., supersensibility, or hyperæsthesia.

In the great majority of cases of these attacks of pain the cause can be traced to some of the conditions which give rise to neuralgia in general, such as malaria, anæmia, and nerve exhaustion. It appears to be a pure neuralgia—i. e., a temporary disease of the nerve or nerves involved. The attacks come on periodically, but irregularly. There is no evidence of cystitis or urethritis, neither is there any change in the composition of the urine that would account for the pain. The best idea of this affection can be conveyed by the history of the most typical case that I have found among a number.

Neuralgia of the Urethra and Neck of the Bladder.—A woman twenty-six years of age, three years married, had never been

pregnant. She was well developed, and, although of a marked nervous temperament, had always enjoyed good health. From puberty onward she had suffered pain at her menstrual periods, but not of a severe character. When she was twenty-four years old she was chilled while riding a long distance on a cold day, which was followed by frequent and painful urination. This was relieved by rest and diuretics, but from that time she was subject to violent attacks of spasmodic pain in the urethra and bladder. The pain was of a sharp, lancinating character, and though generally coming on before and after her menstrual period, was brought on at any time by nervous excitement or great fatigue. During the pain there was some difficulty in urinating, but the suffering was neither relieved nor increased by the act. The duration of the pain varied, but usually did not last more than twenty-four hours. Large doses of opium would relieve her, but, as it caused very distressing after-effects, she avoided taking it except when the attacks were exceptionally severe and prolonged. She was treated for a uterine flexion, and obtained complete relief from the painful menstruation and tenderness of the pelvic organs generally, but there was no relief from the periodic attacks of pain in the urethra and bladder. She acknowledged that it was not quite so severe as formerly at her menstrual periods, but was "bad enough in all conscience," as she expressed it.

Careful and repeated examinations of the urine were made when she suffered and when she was free from it, but no trace of any renal, vesical, or urethral disease was found. The urethra and neck of the bladder were examined with the endoscope several times, but were found to be normal. Suspecting that the neuralgic pain—for such it apparently was—might be due to malaria, she was given fifteen grains of quinine within a period of four hours, followed by Fowler's solution of arsenic in doses of three minims after each meal. The arsenic treatment was continued for several weeks, and gave her some relief, the attacks being less violent, but still she suffered greatly.

Moderate dilatation of the urethra was then practiced, but this only aggravated the trouble. Several different remedial agents—including opium, hot water, aconite, infusion of hops, and belladonna—were injected into the bladder, but none of them gave any relief. The citrate of iron and quinine in five-grain doses was then prescribed to be taken before meals, and Parrish's compound sirup of the phosphates in drachm doses to be taken after meals. When the pain came on she was directed to take every three hours a drachm of camphor-water containing eight grains of muriate of ammonia, and to use a vaginal douche of hot water. This treatment usually resulted in mitigating the pain, but did not completely remove it. Thirty minims of the compound spirits of ether and five minims of the tincture of cannabis Indica every four hours were substituted for the camphor-water and muriate of ammonia, and with good effect. Under this treatment her attacks were far less frequent, and the relief from pain was prompt. She was so much pleased with her improvement that she took a trip through the West and returned quite well, and has remained so for the past eight years. More recently I have had a case which resembled this one in many respects, particularly as regards the character of the pain and its causation, in which a four-per-cent solution of muriate of cocaine instilled into the urethra and bladder gave relief.

Derangements due to Abuse of the Sexual Functions.—Frequency of urination is the chief symptom in this class and is caused by the habit of masturbation. The constant congestion and irritability of the pelvic organs, caused by the unnatural and excessive exercise of the sexual function, give rise to frequent urination. Such patients complain of general weakness, which is not accounted for by any organic disease of the system. Nor is there disease of the bladder; it is simply enfeebled and irritable like the rest of the pelvic organs. To make a correct and positive diagnosis in such cases is by no means easy, because it necessitates detecting the habit of masturbation, and this is usually one of the most difficult tasks for the diagnostician. It is not always prudent to question patients

directly regarding the habit; and even when that is done they frequently fail to comprehend the question, or they answer falsely in the negative. The physician is thus generally left to guess at the truth of the matter.

The symptoms developed by masturbation are depression of the nervous system, manifested by lassitude, sadness, or emotional expressions of joy and sorrow, those affected with this habit being easily moved to smiles or tears. The eyes are dreamy and heavy, and the pupils dilated. Such subjects are excitable, irritable, and easily exhausted, and often have headaches. Nutrition is apparently good in some cases, as is shown by the fair supply of flesh; still, they often suffer from acute indigestion, although at times the appetite is remarkably good. The bowels are usually constipated, and the muscles are soft and flabby. The exhalations from the skin are sometimes changed, so that a peculiar odor is noticeable about such persons. This odor can not be described, but, when once recognized, is easily remembered.

In this variety of functional derangement of the bladder, as well as in all the other varieties of neurotic affections, the symptoms vary in severity to a great extent in the same individual. The trouble is by no means regular and constant in its manifestations, as in organic diseases. Whatever disturbs the nervous system will increase the disorder. The rule is that frequent urination is the prominent symptom, but occasionally pain accompanying the act is complained of. It is then simply a slight scalding pain, experienced when the urine is passing over the irritable or chafed mucous membrane about the meatus urinarius.

I remember a girl nineteen years of age, who had a well-developed general organization and enjoyed good health up to puberty at fourteen, who sought advice regarding "impatience" of her bladder. She was obliged to return home from boarding school because she had to urinate so often that she could not attend to her studies and recitations. Her general nutrition was good, and she menstruated regularly, freely, and without acute pain. Her nervous system was depressed;

sometimes she was languid, low-spirited and fretful, and at other times was bright and disposed to be cheerful. Her manner was rather timid and excited. Her hands were clammy, and her eyes dull and had dark streaks under them. Her chief symptom was the frequent urination which persisted, but was much worse at times than at others. Occasionally she would pass the night without getting up more than once or twice, but during the day she was often obliged to urinate every half hour. There was very little pain except occasionally a little smarting at the meatus. She complained of heat and burning about the vulva and occasional aching in the region of the ovaries. She was easily fatigued and had backache, especially on standing and walking; leucorrhœa troubled her only at times.

I suspected at first that she had either cystic and urethral congestion, or else hysteria giving rise to excessive renal secretion of limpid urine; but an examination of the quantity and composition of the urine proved the contrary. She was put in charge of a very competent nurse, who was directed to find out the habits of the patient.

The report of the attendant was that she had begun to indulge in masturbation soon after puberty, and that the habit had gradually grown upon her. Her nurse surprised her by telling her the cause of her suffering, and readily gained her consent to make all due efforts to recover her self-control. By care, occupation, exercise out of doors, and the moral control of her nurse, she began to improve. Bromide of sodium was given when she was very restless and irritable, but no other medication except free bathing.

In about two months the frequent urination had disappeared, although she would occasionally have a day or a night when she suffered a little in that way. She now has two children and enjoys life very well, being free from her former symptoms and no doubt cured of her former habit.

Frequent and Difficult Urination from Sexual Continence.—That this affection is not rare I saw exemplified in a strong and active lady in good circumstances, who married at twenty-one

years of age, who had her first baby before she was twenty-two, and who nursed the child for eighteen months. Her menses came on when the child was one year old. About three years after her marriage her husband, a strong, vigorous man, died of pneumonia. Several months after the loss of her husband she began to suffer at times from frequent urination, and also had some difficulty in voiding her urine, voluntary efforts being necessary to do so. These attacks would pass off, and she would be comfortable for days, when the same irritation of the bladder would return. She was always made worse by excitement, often being kept awake nearly all night after spending the evening in company.

Her symptoms became so troublesome that she sought advice of a physician, who treated her for cystitis by giving medicines of various kinds. When she first came under my observation I found her in perfect health in every way. The urine was normal, and caused no pain in passing. I was easily able to exclude all diseases except deranged innervation from a possible malarial influence. The periodical character of the attacks favored this view of the case, but the use of the antimalarial remedies gave no relief. I then ordered her to take more active exercise and a limited quantity of plain food, to bathe frequently, and to avoid excitement as far as possible. Bromide of sodium was also given when her suffering was most severe. She improved on this treatment for a time; in fact, she became so much better that I lost sight of her for nearly a year, when she returned, to say that her former symptoms had reappeared and were about as troublesome as before. The same treatment was employed, but did not help her very much. She was then rather nervous and restless, and disposed to be emotional. Three months afterward she was married, and left the city on an extended wedding tour. Upon her return she reported herself as perfectly well.

Incontinence of Urine.—Enuresis nocturna is usually an affection of childhood, but has been known to persist up to the age of thirty years. In some children it is hereditary. One

mother is reported as having suffered in early life, and all the children born to her were affected in the same way. Patients to whom the affection is transmitted are the most difficult to manage, and they often continue to suffer until puberty. The subjects of this affection are usually of the weak, nervous type, although healthy children have been known to have it, but only at intervals.

Cases of incontinence may be divided into two distinct varieties: First, the anæsthetic variety, an excellent example of which class is seen in infants, to whom it is normal up to a certain age. The incontinence in severe fevers illustrates the abnormal phase of the same thing in adults. Secondly, the hyperæsthetic variety, which is really nothing more than irritable bladder. Each variety may exist alone, or both may be combined in one case.

In the first variety the retaining power is defective, the resisting power of the sphincter being insufficient. When the child is put to bed it sleeps soundly through the night, and the nerve susceptibility to urine pressure on the neck of the bladder, being lowered beyond the normal degree, fails to wake the little subject and impress it with the necessity of calling the sphincter muscle into action sufficiently to resist the expulsive power of the bladder walls. In short, in sound sleep the balance between the resisting power of the sphincter and the contractility of the walls of the bladder is disturbed, and the urine flows away without the child's even dreaming of its unfortunate behavior.

In other forms of this affection the brain takes cognizance of the desire to urinate, but too late to control the act. This is seen in children who awake crying when urination is but just begun or half finished. In this case the fault probably lies in the vesical nerves, perhaps wholly so.

In the second variety there is an irritable condition of the bladder (vesical hyperæsthesia), which renders the expelling power greater than that of resistance or retention, and, while the will and cerebration generally are lost in sleep, the contents of the bladder are unconsciously passed before the

subject awakes to resist the act. Closely allied to this is the peculiar affection known as vesical chorea, in which the child while awake—it may be in school or at play—suddenly experiences the sensation that it is about to make water; but, before it is possible to resist, the urine is forcibly spurted out. There are usually choreic movements of other muscles or groups of muscles. This affection is most annoying, and may be accompanied by nocturnal enuresis. It is apparently more common in the male than in the female child.

An irritable condition of the bladder may coexist with an anæsthetic condition of the sphincter vesicæ—i. e., the two causes of incontinence may be combined. Irritable bladder may be due to some neurosis, or to abnormal urine, or reflex irritation from anal fissure, ascarides in the rectum, fistula in ano, hæmorrhoids, or vulvitis.

Enuresis nocturna is not only a filthy habit, and a source of great annoyance to parents, but, moreover, by keeping the genitals wet and irritable, strongly predisposes to bad habits. Then, too, other serious results may happen. The constant wettings are dangerous, in that they may produce many serious complaints from causing the child to "take cold."

Causation.—This subject has not been fully worked up, perhaps because of the difficulties encountered in the investigation. It is evident that there are many, or at least several, predisposing and exciting causes. Some defect in the nervous system, either central or peripheral, is apparently the predisposing cause in some cases, but my own impression is that it is a habit brought about by mismanagement in infancy and childhood. As early as the ninth month most children manifest the desire to urinate by fretting or crying, and if the attendant will at once undo the clothing and place the little one in a proper position, erect or sitting, it will urinate. At any rate, by regularly, at stated times, inviting a child to urinate, normal habits will be established in this respect. Though some intelligent mothers and nurses do remarkably well so far as this is concerned, a great many manage badly, leaving their children day and night to urinate when and

where they please. I have investigated quite a number of cases in relation to causation, and have found evidence in nearly all that they had been left to the freedom of their want of will in childhood.

The exciting cause, which is operative in those who have been all right up to a given time and then taken up the habit, is irritation of the bladder from the eruptive fevers, taking cold, ascarides, anal fissure, and hæmorrhoids, or urine that is irritating from excess of uric acid. Concentrated urine may cause irritation and frequent urination, and this frequency is likely to continue after the cause is removed. Excessive secretion and hence limpid urine, which is often present in artificially fed children, gives the same results as concentrated urine. Improper feeding and neglect or mismanagement is the chief cause of incontinence, as I have observed.

Prognosis.—In some cases the cure is easily and speedily effected; in others the trouble cures itself at or just after puberty; but in a few—a very small percentage—no medical or other means seems to aid the sufferer at all.

Treatment.—That the treatment is not uniformly satisfactory is seen by the number of remedies that have been tried. The proper way is to find and remove the *cause* producing the disease, if it be discoverable, and it generally is. The treatment will, of course, differ in the two classes, and be greatly modified by diathesis and idiosyncrasy. In anæsthesia, local or general, stimulation is indicated. In hyperæsthesia, irritability should be allayed.

Winckel, Barclay, and Brugleman speak very highly of the use of the syrupus ferri iodidi, the last-named gentleman having by its use perfectly cured a girl of incontinence in the short space of fourteen days. This result was probably due more to the effect of the medicine on the blood and general system than to any specific action on the bladder. The sirup of the iodide may be given in from ten to thirty minim doses three or four times daily, according to the age of the patient.

Although belladonna has been lauded by many as a spe-

cific in this disorder, its success is by no means universal. The drug is usually given by the mouth, in from five to twenty drop doses of the officinal tincture. It would be better to begin with small doses in the case of young children, and gradually increase them; for, although no serious results may come from its use in the routine dose—ten drops—the parents may be greatly alarmed by the peculiar redness of the skin, dry throat, and dilatation of the pupils produced in certain cases. It is maintained by some medical men that the good effects are not obtained unless the administration be pushed to the appearance of the scarlet rash. There is, I think, no proof of the correctness of this statement.

A combination of belladonna and chloral hydrate has been used and well spoken of. Winckel, however, though using them in certain cases for a long time, and daily increasing the amount of chloral, has had but poor results, and even in instances where the patients improved, the benefit was seldom permanent. These drugs may be given singly or together, in suppository or by the mouth. If given together, they should not be combined until the time when they are administered, lest the chloral decompose and lose its power.

Narcotics with tinctura ferri chloridi have been recommended by Campbell Black. Winckel speaks well of five to ten drop doses of tinctura thebaica in the case of a child from ten to fourteen years of age, just before retiring. According to Sauvage, cold baths and cold douches to the spine at night are of great service.

Dr. Kelp (Le Mouvement Médicale) reports that he has on several occasions drawn attention to the value of subcutaneous injections of the nitrate of strychnine in the treatment of obstinate cases of nocturnal incontinence. He gives the injections in the neighborhood of the sacrum. A single injection of a very small quantity of the drug suffices to arrest the affection for a certain time, and when it reappears the hypodermic application can be repeated. His latest paper cites the case of a young woman, eighteen years of age, who had suffered from enuresis every night for several months; it

came on after an attack of scarlatina, and persisted in spite of all precautions. The first injection secured a respite of several nights, and the second produced a permanent cure. The patient was a strong, healthy girl, and had never suffered from enuresis previous to the attack of scarlatina.

Such a plan of treatment I regard as useful only when there is deranged innervation, characterized by weakness. It would be difficult to get a child to submit to these injections if long continued, and I should in any case, whether child or adult, expect the incontinence to return as soon as the strychnine was discontinued.

In cases where the vesical irritability is due to abnormity of the urine, such as lithiasis, oxaluria, and acidity, these conditions should be corrected in the manner I have pointed out elsewhere. If due to ascarides, anal fissure, and that class of rectal trouble, the difficulty will usually disappear when the cause is removed. In irritability the usual soothing and demulcent drinks should be used. Oil of sandalwood has acted remarkably well in some of these cases; in others, bromide of sodium and tincture of nux vomica have been effectual.

In the anæsthetic variety, where the anæsthesia is local or general and more or less marked, stimulants should be employed. Narcotics are as hurtful here as they are useful in the hyperæsthetic class. Strychnine by the mouth, in suppository or hypodermically, often produces good results, as also quinine, whether the presence of malaria is suspected or not. When the bladder is small and refuses to be distended in the natural way, great benefit can be obtained by teaching the child to retain her urine as long as possible during the day. This is most important in all instances, especially in the contracted bladder cases, but to be effective it must be very systematically carried out. The patient should be carefully watched and kept interested to divert attention from the urinary organs; then, when the desire comes, convenience for urinating should be at hand. The time should be noted, and the patient directed to refrain longer on each subsequent oc-

casion. Better still, the attendant should direct this, so that the patient may not have to think about it.

This one factor in the treatment (when the patient will co-operate, or where an attendant can be procured who will carry out the directions) is the most valuable of all. In cases of abnormally small bladder, washing out the bladder and distending it a little more each time is well spoken of. In one such instance, where there was irritability, Winckel produced a cure by first injecting a solution of nitrate of silver, and following it with sulphate of morphine. This treatment, however, applies more to the irritable than to the anæsthetic type. The little patients are very hard to operate upon, and, unless great care is exercised, much mischief may be caused by local treatment. This, however, belongs to the domain of surgery.

Winckel claims good results from the use of the electric current, applied in the manner spoken of under the head of paresis vesicæ.

When the bed-wetting is due to pure carelessness, laziness, fear, or dread of the cold air in rising, in idiots and half-witted children, much may be gained by proper education.

There is a general plan of prophylaxis recommended by common sense—viz., the heartiest meal should be in the middle of the day; but little water ought be taken toward evening, and the food be plain and unseasoned. The bowels should be kept regular; no coffee or tea allowed, and the little patients put to bed early, after it is assured that the bladder is first thoroughly emptied. They should lie upon a hard bed, with not too much covering; the air in the room be maintained fresh and pure, and the genitals kept clean and dry. No places of amusement ought be visited after dark; and they should occasionally be awakened to urinate, especially at about the time the parents are going to bed. When it is discovered that they have wet the bed, they must be awakened, and talked to and reasoned with, if they are able to comprehend what is said and meant.

Children should not go to school too early, or stay there too long. If the enuresis be due to masturbation, the parents must be cautioned to watch closely, and to use every means in their power to stop it. A child ought never be whipped for the offense or misfortune of wetting the bed unless the incontinence be due to pure laziness, and I doubt if it ever is.

Owing to the fact that incontinence is an affection of childhood, and occurs but seldom in women, cases will not be given to illustrate what is said in the text on that subject. This omission is made for the additional reason that partial incontinence, due to displacements of the bladder and urethra and from other causes, is discussed fully in my work on the Surgical Diseases of Women.

CHAPTER XXXIII.

FUNCTIONAL DISEASES OF THE BLADDER, CAUSED BY CERTAIN AFFECTIONS OF THE GENERAL NERVOUS SYSTEM.

THERE are many nervous women who are annoyed by frequent urination when excited in any way. They are not hysterical, but sensitive and sympathetic. Fear, joy, sorrow, or expectation will bring on an attack, and the more they urinate the more they incline to do so. I have found in such cases that by exercising the will-power to resist the inclination, they improve without further treatment.

Derangements due to Hysteria.—Hysteria holds a prominent place among the causes of functional derangement of the bladder, the vesical affection probably being only a fragment of a general neurosis. Any one who has suffered the mortification of an involuntary evacuation of urine from fear will understand how the brain and nervous system can influence the bladder.

In the variety of conditions grouped under the head of hysteria it is often observed that frequent urination is a prominent symptom. The cause, in many cases, is the peculiar character of the urine secreted in this disturbed condition of the nervous system. The urine of hysterical patients is deficient in solids, the watery portion being greatly in excess. This unnatural composition renders the urine irritating to the bladder, so that it can not long be retained. The quantity of urine secreted is, at certain times, excessive, which, together with its irritating quality, renders urination necessarily very frequent.

But apart from the frequent urination which occurs in

severe attacks of hysteria, due to the conditions just mentioned, the same thing is often seen, which can only be accounted for by the state of the nerves which govern the action of the bladder. When the quantity and composition of the urine are normal, and the patient can retain it without pain or distress during the night, but has to pass it every hour or two during the day, it may safely be presumed that the trouble is functional and due to a disordered state of the nervous system. The only condition which resembles this history is occasionally seen in prolapsus uteri, the patient being free from trouble while reclining, but having to urinate frequently when in the erect position.

Hysterical patients frequently suffer from retention of urine. Some of them complain for a time of difficulty in emptying the bladder, and finally fail to do so altogether. At other times they suddenly find that they can not urinate.

There are conflicting views regarding the cause of this retention, some believing that such patients can not urinate, and others that they will not. Those who believe that the trouble is feigned and not real do so on the ground that in this morbid state of the nervous system the patients enjoy catheterization, which would be distressing to any one of healthy mind and body. Others claim that, in the extreme sexual excitement which occurs in some cases of hysteria, the chronic erection of the clitoris exerts pressure upon the urethra. The fact is, both classes are found in practice. There are those who complain of retention when they know that the doctor will use the catheter, but they can urinate easily when they please. Others I have seen who were suffering from excessive and painful distention of the bladder, and would have gladly relieved themselves if they could.

The following case is rather typical of one class: A single lady, of the *sensitif* class, at times could urinate very well, at others was obliged to try repeatedly before she succeeded. She was a lady of high culture and liberal education, but was not agreeably occupied, and hence she had much time for introspection.

She called her physician, who prescribed remedies, but finding that they did not give her relief, made an examination of the pelvic organs, but could find no cause for her inability to urinate with facility.

Soon after she was taken with complete retention, which was relieved by the catheter. This continued for weeks, requiring the doctor to visit her three times a day, and occasionally at night, to pass the catheter. For some reason, which was not very evident, and could hardly be due to weakness or suffering, she remained in bed most of the period during which the catheter was used. Becoming weary of such close attention, the doctor tried letting her wait, to see if a full distention of the bladder would have any good effect. This caused her so much pain that the doctor felt somewhat mortified at his want of feeling in permitting her to suffer. During this time he had tried a number of remedies, but without effect.

At this stage of the history I was called in consultation, but could find no evidence of any organic disease, local or general, and the urine was normal. I suggested to the attending physician that the trouble was hysteria, but he assured me that she was singularly free from all evidences of that affection; indeed, he had found her remarkably calm and sensible, and very free from nervousness of every kind. I still held to the diagnosis of hysteria, and advised full doses of bromide of potassium and a sitz bath when she desired to urinate. I also recommended that she should go to Saratoga and drink Hathorn water. She did this; the water gave her diarrhœa, and her retention was immediately relieved.

Frequent Urination due to Hysteria is even Commoner than Retention.—I remember a lady, twenty-three years of age, enjoying good general health and living in very easy circumstances, who had some disappointment which caused her much distress. She had faintings of a mild character, which alarmed her mother and called forth much sympathy. About this time she began to suffer from frequent urination. This did not yield to the treatment employed by the family physician,

and she was brought to my office for advice. Her health was excellent, but she was greatly annoyed by this frequent urination. The urine was normal, except at times, when it was of a very light color. She could sleep all night without being disturbed; if by chance she did not go to sleep immediately on retiring, she was obliged to micturate every few minutes, and if she was awakened in the night she had to do so many times before she could sleep again.

Any little mental excitement, such as going to church or to the theater, would aggravate the trouble, so that she had to give up all public duties and pleasures. Systematic exercise and occupation, cold baths, bromide of sodium, and a full assurance on my part that she would soon recover, helped her greatly. She was commanded in a very decided way to resist the inclination to such frequent urination, and obeying orders recovered completely.

I. DERANGEMENTS OF FUNCTION DUE TO DISEASES OF THE NUTRITIVE AND NERVOUS SYSTEMS.

This class naturally subdivides itself into—

First. Derangements occurring in both acute and chronic diseases. Second. Derangements due to consequent abnormal conditions of the urine.

First. Of the derangements which occur in the course of acute diseases, such as retention and incontinence of urine and frequent urination, nothing more than the mere mention is necessary. They rarely require any treatment, except possibly in the case of retention, when catheterization is to be employed, and they cease as soon as the acute stage is passed. Those derangements, however, which are due to chronic affections of the nutritive and nervous systems are more permanent, and often tax the resources of the physician to the utmost. The two most important are—

(*a*) Paralysis of the bladder.

(*b*) Incontinence of urine.

Paralysis of the Bladder.—This trouble has also been described under the names of weakness or palsy of the bladder

and vesical atony. It occurs in two forms: first, from causes residing in the organ itself; secondly, from those due to outside influences. As affections in the first form will be fully described in another place, I shall here simply mention them. They are: fatty degeneration and atrophy of the muscular walls of the bladder, a common cause of paralysis of this viscus in old women; overstrain of the muscular structure from prolonged retention, voluntary or involuntary; displacements and inflammations of neighboring organs affecting its position or nutrition; and abdominal and pelvic tumors.

In fevers of a serious type the power of nerve conduction may either be lost or impaired, and a partial or total vesical paralysis result, with overdistention and dribbling of urine.

The second form is due to influences acting from without the bladder, and includes acute and chronic meningitis; apoplexies of the brain or spinal cord; sopor; delirium; myelitis of the lower part of the spinal cord; inflammation of any kind primarily affecting or involving in its results either the lumbar nerves or ganglia; endarteritis deformans of the pelvic arteries; lumbar or renal abscesses; blows or falls upon the loins, suprapubic region, or head; shock or disease of the vesical or lumbar nerves from the prolonged use of opium or poisoning by it, and also shock due to overdistention of the organ itself.

Symptomatology.—Except in cases of injury of the brain and apoplexies, the invasion of the disease is usually very gradual. This is especially the case in the aged, and sometimes, though rarely, in young people. The patient first observes that the urine is expelled from the bladder with less force than usual, that the act of emptying the bladder is more slowly accomplished, and that after a time the organ is unable to expel its contents without considerable straining and aid from the abdominal muscles. At a later date, if the disease goes on unchecked, the stream is less and less forcibly ejected, intermits, and the bladder, after much straining, is but partially emptied. Finally, partial or complete retention follows.

The female bladder seems to be capable of more distention than that of the male. Lieven, in a case of supposed ovarian tumor, removed by catheterization about nine pints of urine from a woman thirty-three years of age. The fundus of this patient's bladder reached as high as the ensiform cartilage. I once saw a case exactly like this, except that the bladder only reached to about two inches above the umbilicus. More than a gallon has been drawn off by Hofmeier and others.

A peculiarly interesting experiment bearing upon the dilatability of the bladder was made by Budge. He found that section of the lower part of the spinal cord, when the bladder was considerably distended, allowed increased reflex action of the sphincter, and enormous distention then took place—even more than could be produced by force after death. This is especially interesting in relation to vesical paralysis and retention due to injury or disease of the lumbar portion of the spinal cord.

In some cases of overdistention the resistance of the sphincter is overcome somewhat, and a constant dribbling of urine takes place. It has been called by some authors incontinentia paradoxa. These instances are liable to be mistaken for complete incontinence.

In rare cases rupture of the bladder may take place; but more commonly dilatation of the ureters and hydronephrosis. If the condition of vesical distention be not soon relieved, vesical catarrh, true inflammation, ulceration, and death take place. In forms due to injury or disease of the spinal cord (low down) there seems to be a paralysis or peculiar condition of the nerves presiding over the nutrition of the vesical mucous membrane, and destructive changes are not uncommon.

Diagnosis.—The diagnosis, though easy, is sometimes not made, owing to ignorance or careless observation. When called to a case where there is supposed distention of the bladder, the abdomen should first be examined to see if there are signs of a tumor, and then a catheter should be passed, if that be possible, to determine whether an abnormal amount of urine is present. If this is so, and the tumor gradually

subsides as the urine flows, the diagnosis is at once made. When, however, a catheter can not be passed into the viscus, fluctuation should be sought both through the vagina and on the surface of the tumor. If the diagnosis be still obscure, the aspirator needle should be passed into the tumor and its fluid contents carefully tested. The age of the patient, the duration of the disease, and its time and method of invasion will aid in settling the question. The trouble may, however, occur at almost any age, and the fact that a little urine has been passed at short intervals will tend to deceive.

In the early stages of the disease an idea can be gained as to its progress by carefully noting the amount of urine passed at each micturition, the amount passed in twenty-four hours, the length of intervals between each act, the force of the stream, whether the bladder is fully or but partially emptied, and whether the stream intermits. The urine should be examined often, else cystitis may get a firm foothold before its existence is recognized. In drawing off the urine for testing or other purposes, the catheter should be surgically clean.

Incontinentia paradoxa must be differentiated from incontinence due to mechanical causes, such as abnormal urine or the pressure of neighboring organs upon the bladder.

Prognosis.—If the disease be uncomplicated, the prognosis is favorable. Paralysis of the organ accompanying the fevers, dysentery, peritonitis, and the like, usually disappears with the cure of the original disease. If the paralysis be accompanied by disease of the bladder walls, or if it occurs in weak, debilitated constitutions, or has been of long duration, or occurs in old age, the prognosis is unfavorable. A cure, if effected at all, will be only after long and tedious treatment. When due to centric causes, or to serious spinal disease or injury, or when it occurs in old people, or with meningitis, or with systemic trouble, the prognosis is very grave indeed.

Causation.—Deranged innervation due to the central lesion already mentioned, either cerebral or spinal, may be regarded as the principal cause of this affection. If the pa-

ralysis has been of long duration, nutritive changes may occur in the bladder; but as these will be discussed under the appropriate head, I need say nothing of them here.

Treatment.—In all cases where there is fear of vesical distention the bladder should be emptied at stated intervals. By way of helping the patient to pass water herself, hot hip-baths and fomentations over the bladder may be tried. The sound of water falling from one vessel into another often accomplishes the same result. If these means do not succeed, the catheter must be used.

Attention may be called here to a very important practical point in connection with the use of the catheter. When the bladder has become very much distended it can not be thoroughly emptied unless pressure is made upon the abdominal walls; if this pressure is made while the catheter is in the bladder, and then discontinued, air will be drawn through the catheter into the bladder, and decomposition of the urine will thus be favored.

Marked distention can usually be relieved by the catheter. In some examples, however, the bladder rises up into the abdomen and puts the urethra upon the stretch, thus changing the direction of its axis from the normal to one from below directly upward, the canal being nearly parallel to the posterior surface of the pubic symphysis. In these instances passing the catheter will tax the skill somewhat. Great care must be taken to avoid injuring the urethra.

In emptying a greatly distended bladder, a binder should be applied to the abdomen and tightened gradually as the urine flows. It is not safe to draw off all the urine at once; it is better to take away about half, and then after a time to draw off more, until the organ is empty. Syncope and even death, which are said to have occurred in these cases after rapid emptying of the organ, are probably due to the sudden removal of the pressure on the abdominal organs, which so deranges the circulation as to produce these serious results. The sudden removal of pressure (which causes anæmia) from the vesical walls allows intense congestion, and, the vesical

walls being paralyzed, catarrh and cystitis result. Therefore a distended bladder should be emptied slowly.

When, for any reason, a catheter can not be introduced into the bladder, hot hip-baths should be again tried, and opium given in sufficient amount to relieve pain and any spasmodic action that may exist. If after this there is failure to enter the bladder (and it is only in very rare cases that this occurs), recourse should be had to the aspirator, and, after having punctured the bladder, the urine should be drawn slowly and carefully in the manner already described.

In the commencement of vesical paralysis and when incontinentia paradoxa exists or has existed, the patient should be taught to use the catheter herself several times daily until the vesical power returns. It is of the utmost importance that the catheter be *clean*. After each time that it is used it should be thoroughly rinsed in a chlorine solution, or boiled for fifteen minutes. A vesical catarrh is undoubtedly promoted by foul catheters, and this is especially so in hospitals, where the same instrument is often used on a number of patients.

In cases of paralysis, commenced or established, the effect of the induced electric current may be tried. One pole thoroughly insulated up to the point should be placed in the bladder and the other over the pubic symphysis and loins, letting the current flow in various directions, through, over, and into the affected organ. The German authors—especially Winckel, by whom this method is highly recommended in this and like complaints—say that the sitting should last about five minutes.

Forcibly distending the urethra and washing out the bladder with a solution containing salicylic acid have been tried and recommended. I can not see the expediency of this unless vesical catarrh exists ; and even then washing must be done gently and carefully, and without previous dilatation of the urethra.

Attention should be paid to the general health. The food should be good and nourishing, and the alimentary

canal kept in a proper condition to receive and digest it. Wines (especially champagne), beer, and ale may be of use. I can at least say if stimulants are ever given in diseases of the bladder it should be in examples like these now under consideration. These patients are usually more comfortable in the standing or sitting than in the supine posture. As they are commonly worse in winter than in summer, it is advisable, if the case is chronic and the patient able to bear transportation and rich enough to meet the expense, to send her to a moderately warm climate during the winter months. This will apply in most of the diseases of the bladder.

If the trouble be purely atonic, camphor or musk may be administered internally. Tincture of cantharides, in from five to twenty drop doses, three times a day, has been recommended as a vesical excitant. I can not indorse its use without the caution that, besides the tendency to irritate the kidneys and produce congestion and nephritis, it may induce a severe cystitis. Furthermore it may produce serious trouble without causing much pain to give warning of the danger, because the paralysis lessens the sensitiveness of the bladder, so that destruction of tissue may occur without producing the usual pain and suffering.

Strychnine has been extensively prescribed in this complaint, and with good results in some cases. Its failure to do good in many instances is undoubtedly due to the fact that it was not given in sufficiently large doses. It may be safely pushed as high as the one twentieth of a grain three times a day, stopping for a few days if any of its characteristic symptoms appear. It has also been used hypodermically in the neighborhood of the bladder.

Ergot has been found serviceable in cases where the paralysis was due to exposure to cold, or prolonged retention from any cause. The fresh powder has been recommended, and may be given in doses of from eight to sixteen grains four or five times daily. It is more pleasant, and probably more effective, to give its equivalent of the fluid extract. Aliers has used it with decided success in cases of vesical paralysis

due to centric troubles, such as apoplexy, and has prescribed as much as forty-five grains in the twenty-four hours. It is highly spoken of also by Roth, Jacksch, and others.

Rutenberg (Wiener med. Wochenschrift, 1875, No. 37) has recommended, in cases where there is destruction of muscular tissue or incurable paralysis from any cause, that an opening be made into the bladder just above the pubic symphysis, keeping the fistula open and closing the urethra by operative procedures. The urine can thus be retained, unless the patient bends forward and downward or lies upon her abdomen. A urinal would, of course, be necessary to protect the patient.

Paralysis of the nerves which control the bladder walls generally causes retention, as already noticed. Disease of the nerve centers which preside over the retaining power of the bladder produces incontinence.

There are, then, two opposite results or derangements of function which come from lesions of innervation due to disease of the different portions of the nerve structures. The following examples are of the latter variety, where paralysis of the bladder was followed by incontinence in case of insanity.

In one, the insanity had existed for eight months, and although at first violent, was now mild, indeed rather a dementia. The patient's physician had observed for some time that her bowels were obstinately constipated, and the nurse noticed that she had great difficulty in evacuating the bladder. She also appeared to have some discomfort in that region; finally, went for over twenty-four hours without urinating, and then I was called to see her. I found the bladder greatly distended, and yet I could not perceive that she had pain or tenderness on that account. The catheter was employed, and three and a half pints of urine were removed. After this the catheter had to be used twice in twenty-four hours for five weeks. During this time the customary means were tried to restore the function of the bladder, but without effect. The urine then began to flow constantly. When I heard of this, I presumed that the bladder had become overdistended, and that

the nurse who used the catheter had not emptied the bladder. This I found was not so, as the bladder was empty. The incontinence continued until the patient died of general paralysis.

In another case I witnessed paralysis of the bladder from cerebro-spinal meningitis in a girl twelve years old who presented the usual clinical history of that affection until the seventh day of the disease, at which time the pain had subsided to a great extent, but her mind, which up to this time had been clear, began to wander. Retention of the urine was noticed by her nurse, who called my attention to the fact. I found the bladder distended, but not greatly so. She was asked if she did not desire to urinate, but answered in the negative, so far as I could understand her. The catheter was used, and, although the distention was not great, the bladder did not contract well, so that abdominal pressure was necessary to make the urine flow through the instrument. The use of the catheter was necessary for some time, during which she improved in her general condition, the mind becoming quite clear. She then began to express at times a desire to urinate, but could not relieve herself. Four days later she succeeded in doing so, but did not completely empty the bladder. She gradually improved, but the catheter was passed once every twenty-four hours for a week longer. The desire to empty the bladder became more and more urgent, and she had pain in the urethra in urinating. An examination of the urine at this time showed that the patient had cystitis—due, I believe, to the use of the catheter. The cystitis was treated according to my usual methods, and resulted in a good recovery.

In a case of paralysis of the bladder from progressive locomotor ataxia in a lady who had been affected with this malady for more than a year, retention was, of course, the leading symptom. There was some decomposition of the urine, but nothing else to distinguish the disorder from paralysis of the bladder, occurring in other cases of disease and injury of the spinal cord. The attendant was advised to use

the catheter regularly, and to wash out the bladder with a solution of borax—one drachm of borax to a quart of warm water. I learned subsequently that this patient had incontinence of urine before she died.

II. DERANGEMENTS DUE TO ABNORMAL CONDITIONS OF THE URINE.

The bladder, being made to contain urine of a certain composition, at once feels and responds to any abnormity. If the change in character is only occasional, the effects are slight and of short duration; but if the abnormity be constant, or nearly so, or if the altered urine finds a hyperæsthetic surface to irritate, the results are more annoying.

Urine which is too acid, or alkaline; too limpid, or greatly concentrated, acts somewhat like a foreign body—it irritates, and the bladder inclines to expel it.

Deposits of any of the urinary salts in the viscus may produce an irritable condition, and, if unchecked, lead to organic disease of the bladder. Uric acid, in large or small crystals, in little masses, forming gravel and minute calculi, the amorphous urates, the triple and amorphous phosphates (these, as a rule, however, occurring only in decomposition of the urine), and oxalate of lime, may give rise to considerable trouble. There are some other deposits, such as cystine, that are of such rare occurrence that they need not be mentioned in this list. In any of these cases, but especially when there is a deposit of uric acid, one or two things may result: first, a real excess of the salt in the urine; and, second, a condition of the secretion, where, whether the amount of salt present be normal, or less or more than normal, it will be precipitated in the bladder. In order to treat the case properly these results must be borne in mind.

As an example of the first some forms of dyspepsia may be mentioned, when, owing to a defect in either primary or secondary assimilation, the salt or salts are eliminated by the kidneys greatly in excess. Here a normal or even an

abnormal amount of water in the secretion could not hold them in solution, and they are consequently precipitated.

As an example of the second may be taken cases of hepatic disease, in which, although the uric acid is eliminated in abnormally small amount, it is precipitated on account of deficiency of water, excessive acidity, and possibly by absorption of the watery element of the urine while in the bladder.

In some cases, with an excess of salts there may be excessive acidity and lack of water. Some forms of dyspepsia are notable examples of this, and as low nerve condition frequently accompanies these disorders, the abnormal urine meets in the bladder with an irritable mucous membrane. In these instances the acidity is quite as hurtful as the deposit.

Deposits of oxalate of lime in the bladder are not so common (except in lime-water regions) as those of uric acid. In cases of the persistent deposit of oxalate of lime in the urine, known as oxaluria, there is marked irritability of the bladder. This has been ascribed by some to the presence of minute octahedra of this salt irritating the mucous membrane. It is more than likely, however, that the derangement of the general nervous system, always existing in these cases, stands as a *propter* rather than a *post hoc*, and that the bladder difficulty is but a local manifestation of the general disease, and consequently a pure neurosis. That the urine in oxaluria does possess irritant properties there is little doubt, but it is hardly likely that the symptoms occurring here would be produced unless there was already an abnormal condition of the vesical mucous membrane.

Many authors hold that the high specific gravity of a single specimen of urine must not be taken as an evidence of concentration, or the low gravity of excessive limpidity of the twenty-four hours' urine. This is very true in regard to the total amount passed in a day; but, as the bladder has to do only with the urine in it at that time, it will be well in these cases to examine several specimens in a day, rather

than to depend for information on the reaction of the total amount of urine passed.

Urine may irritate the same patient at one time from being too limpid, and at another time from being too highly concentrated. These variations must be carefully watched and treated. A bladder that is irritable at all times, and with urine of varying reactions, may be set down as one affected with a pure neurosis, if no organic cause be found, for the urine could not work the mischief continually if normal at certain periods.

Symptomatology.—Patients suffering from this affection usually complain of frequent urination and vesical tenesmus.

In some instances there is smarting pain in the urethra during and for some time after the passing of water, and there is a sense of heat in the bladder and a desire to urinate which are not fully relieved when the bladder is empty. This last-named symptom belongs more especially to those cases in which the urine salts are in excess. When the urine is defective in the salts—that is, when the urine is limpid—the only symptom present is frequent urination. It will be observed that these indications are the same as those presented in a variety of affections, and hence can not be depended upon in making a diagnosis.

Diagnosis.—The diagnosis must be made by excluding all other conditions which give rise to this derangement of function, by repeated examinations of the urine, which will show its abnormal state.

Prognosis.—The relief of this class of patients will depend upon the possibility of correcting the constitutional affections which produce the pathological state of the urine. If the abnormities of the urine persist for a long time, cystitis and urethritis may be produced. I am sure that I have seen cystitis which could be traced to long-continued abnormal states of the urine.

Causation.—In discussing the pathology of this class of functional derangements the causes which produce them have been fully brought out, so that they need not be repeated here.

Treatment.—In cases of concentration of the urine due to acute febrile action, the patient should be liberally supplied with cooling drinks; and as in these affections the urine is generally too acid, the slightly alkaline, effervescing waters will be found useful.

In digestive troubles, with excessive acidity or saline deposit, attention should be paid to diet, bathing, and regularity of the bowels, as well as to the taking of a proper amount of exercise. Where deposits of uric acid take place there is usually some defect in either primary or secondary assimilation. This should be sought out and remedied. In excessive acidity with deposits of uric acid, the alkaline carbonates act in a double way—first by neutralizing the acidity of the urine, and second by acting on the liver to lessen the amount of uric acid produced. The following is a very pleasant and efficient prescription in these cases:

℞ Potassii bicarbonatis,
Potassii citratis.....āā ʒss.;
Syrupi simplicis..... ʒiv.

M. Sig.: Take one drachm in half a tumbler of water, adding two drachms of lemon juice. Drink while effervescing.

The late Prof. Armour gave some very excellent advice regarding the management of such cases, which I will reproduce in his own words:

"When the urine is acid in any of the forms of cystic irritation, great relief is experienced from the use of alkalies, especially when administered in an infusion of buchu. I regard buchu as a remedy of undoubted efficacy in all cases of vesical irritability. It seems to possess similar properties over the urinary tract that bismuth does over the intestinal, and is an admirable vehicle in which to administer the various alkalies. The citrate of potash with buchu is an excellent combination where we desire the joint action of these remedies. The liquor of potash, the bicarbonate and the iodide of the same, also possess a high degree of utility in the class of cases referred to, and their therapeutic action is

certainly never disturbed by administering them in an infusion of buchu.

"In irritable conditions of the bladder associated with a gouty and lithic-acid diathesis the carbonate of lithium is a remedy of undoubted efficacy. It perhaps excels the preparations of potash in rendering uric acid and the urates soluble."

The following is the formula of a prescription which answers well:

℞ Lithiæ carbonatis..... ʒij;
Acidi benzoici..... ʒiij;
Sodii boratis..... ʒj;
Aquæ dest..... ℥iv.
M. Sig.: One teaspoonful in a large glass of water.

Limpid urine is usually due to some general nervous trouble or cerebral disease. In such instances treatment should be directed to the original disease.

Deposits of amorphous or triple phosphates are rare unless there is some organic disease of the bladder. Where the deposits are not due to decomposition, some decided nerve trouble is usually present, and here, as in limpidity, the attention must be turned to treatment of the general trouble.

In oxaluria attention must be paid to the moral, mental, and physical condition, and time must not be wasted in treating mere symptoms. In the way of medication, the following prescription is looked upon by many as almost specific in these cases:

℞ Acidi nitro-muriatici diluti..... ʒv–vj;
Tincturæ nucis vomicæ..... ʒiij;
Olei gaultheriæ..... ♏xij;
Aquæ.....ad ℥iv.
M. Sig.: One drachm in water before each meal.

In some examples the pure non-diluted acid, freshly made up, acts better than the dilute. It should be given in smaller

doses, of course, than the dilute, and in plenty of water at the time of taking it. In all cases of urinary deposits pure water should be freely taken, and the greatest attention paid to general hygiene and to mental and moral surroundings.

Many of the slightly alkaline mineral-spring waters will be found of use, acting gently on the liver, flushing the kidneys and urinary organs, and slightly relaxing the bowels. A considerable quantity should be taken in the course of the day when the stomach is empty.

The following cases show derangement of function from this cause:

I found irritation of the bladder from abnormal urine in a patient forty-three years old, large and stout, who had menstruated scantily for several months, and, as the flow diminished in quantity and duration, gained in flesh but not in strength. She had a very good appetite and lived well, but did not feel in her usual health. She became conscious of a gradual disinclination to mental and physical activity, and backache, headache, and wandering pains here and there, occasionally annoyed her. After these symptoms had continued for a time urination became more frequent and at times slightly painful. She noticed also that there was a sediment in the urine.

These symptoms caused her to seek advice from the fear that she had Bright's disease. She was found to possess a very good organization and there was no organic disease of any kind present. All the evidences of excrementitious plethora were well expressed in the abundant adipose tissue, coated tongue, constipation, muddy appearance of the eyes, full slow pulse, shortness of breath on exertion, depression of spirits, disposition to sleep, and at times sleeplessness. The urine was examined, and found to be slightly alkaline, its specific gravity was 1030, and there was neither albumin nor casts. The salts of the urine were in excess, but, as a quantitative analysis was not made, its exact composition was not obtained. The diagnosis of general excrementitious plethora from imperfect elimination was made, and the frequent uri-

nation was attributed to the abnormal condition of the urine. Ten grains of pilulæ hydrargyri and one grain of ipecac were given at bedtime and a Seidlitz powder an hour before breakfast the next morning. This was repeated in five days.

The quantity of food was diminished; she had been taking extra diet to make her stronger. Milk was the chief article permitted, with a very little animal food once a day. A Turkish bath was taken twice a week and out-of-door exercise gradually increased. The bowels were kept rather free by giving a dose of Congress water an hour before breakfast every morning. Under this treatment she improved in every way, the irritation of the bladder subsided, and did not return, and the urine became normal.

Frequent Urination from Abnormal Urine.—I also found one case especially that exemplified this form of trouble: that of an unmarried lady, thirty years old, of good constitution, very ambitious and energetic, who overtaxed herself during the winter, and toward the end of the season began to suffer from frequent urination and a sense of burning heat in the bladder and urethra following the act. After a time these symptoms became very annoying, and, as she was a nervous, sensitive person, she suffered quite severely. She was in ill health, her appetite was poor and her digestion impaired; she was constipated, and suffered from rheumatic pains in the joints and in the back of the neck. In short, her case gave a fairly good history of dyspepsia and neurasthenia plus the irritation of the bladder, which was her chief source of discomfort. The urine was diminished in quantity, dark in color, very acid, and of high specific gravity; no albumin or casts were found. She had been quite free from any affections of the pelvic organs, the present disturbance of the bladder being the only suffering she had ever had in that respect.

My first impression was that she had cystitis, but there were no products of inflammation found in the urine, and therefore the diagnosis was made as stated above. Peptonized milk was ordered, with raw eggs, and, in addition, bar-

ley gruel, clear soups, and bread. Two drops of liquor ammonia in a wineglass of water were given every two hours until the urine became less acid in reaction. Her bowels were kept regular by small doses of Rochelle salts and cream of tartar taken in the morning.

Rest was insisted upon, and massage ordered every third day. As soon as the urine became less acid and dense, she obtained some relief, but was not restored to her usual condition. It was not until her general health had been improved that the urine became normal and the irritation of the bladder finally left. An interesting point in the treatment was observed: for a time she was partially relieved by the alkaline remedies, but when she ceased taking them the irritation of the bladder returned.

When her general health was restored by rest and tonics the urine became normal, and the irritation of the bladder disappeared entirely. Cases of this kind are sometimes helped by drinking lithia water between meals.

Baruria—as its name indicates, an abnormally high specific gravity of the urine—is not very common. Dr. Samuel West describes it appearing in a woman who after "catching cold" had pains and aches in her limbs, which became severe enough after a week to keep her in bed. These pains continued, and there was swelling of the joints. The temperature was 100°, and she perspired freely. The urine had a specific gravity of 1040, and yielded copious crystals of nitrate of urea, with nitric acid. Her appetite had been for some days very bad, and in the hospital she took but little milk or beef tea. For two days the condition of the urine was the same, and the percentage of urea 5·1. This percentage gradually fell to normal, and as it did so all the patient's symptoms disappeared. The case was regarded as one of baruria. The account of the case given by Prout was summarized and compared with the present one, and reference was made to other authors, by some of whom the existence of the affection was questioned, while by others it was not referred to at all. A somewhat similar case, the result of overfeeding and consti-

pation, has been described, in which like symptoms were associated with a high percentage of urea, and disappeared when the amount became normal.

III. DERANGEMENTS DUE TO MALARIA.

These functional derangements are not easily classified, owing to the fact that the *materies morbi* of malaria acts on the nervous system, the blood, and also by changing the character of the urine. All these causes act together to derange the function of the bladder.

Previous to my own work on this subject there was little if anything known or said about it. As I have observed this disorder, the bladder and urethra are usually both affected, but I do not consider the disease inflammatory in character. Symptoms of malaria are usually present, but not necessarily chills and fever. On the contrary, I believe that I have observed the affection more frequently in remittent than in intermittent fever, and very often, where the constitutional indications were not more than slight derangements of the digestive organs, with moderate elevation of temperature in the after part of the day.

The symptoms vary, but usually are as follows: The patient complains of frequent desire to urinate, and of some vesical tenesmus; severe burning pain on passing water, with stinging and burning in the urethra after the act. The history of such cases resembles acute urethritis so far as the abruptness of the attack and the tenderness and pain of the urethra are concerned, but there is usually no discharge, or, at least, very little. As a rule, the suffering is greatest in the afternoon and early part of the night. Under proper treatment the disease disappears as promptly as it comes.

Since I called attention to this subject Dr. Leake (paper read before the Texas State Medical Association) reports his experience. He says, in part: "The case is one exemplifying the effect that the malarial poison may exert upon the female bladder; an observation which may appear commonplace, since, as is well known, it has not escaped mention by

Prof. Skene, in his excellent work on the Diseases of the Bladder and Urethra in the Female, as well as by other authors of equal or less prominence, who have attended to the same subject.

"A lady thirty-seven years of age, whose health has been uninterruptedly good—the mother of six children, the last being an infant of four months—applied to me for treatment for (what she considered the ailment to be) incontinence of urine. She stated that the condition had come on gradually, at the first amounting to a mere frequency of urination during the day, without any attendant pain or other symptom which attracted her attention. This frequency had increased, however, to such an extent as to seriously embarrass her in the performance of domestic duties, and prevent her from visiting her friends. Moreover, she soon became troubled at night, often rising six or perhaps a dozen times in obedience to the urgent calls for urination. The amount of urine passed at each discharge was not large, but exceeded in quantity that ordinarily retained in cases of acute cystitis, which the affection in many respects resembled.

"There was no deposit worth noting in the urine, and the secretion appeared to be somewhat higher colored than normal. There was, also, a superabundance of mucus in the form of flocculi, but no pus or blood.

"As the case progressed, the desire to urinate was preceded by a sharp twinge of pain which, the patient said, 'was low down, at the very neck of the bladder,' but which was immediately relieved on emptying the viscus. There was no tenderness at any point, except a slight pain experienced when the neck of the bladder was firmly pressed upon. The frequency of micturition increased to almost constant dribbling from the bladder; both daily and nightly the cloud of mucus in the bladder was much augmented, and while the color appeared to remain unchanged, there was evidently a large excretion of solid matter composed probably of phosphates.

"The tripod of treatment—namely, rest, opium, and alka-

lies—upon which Van Buren and Keyes conjointly protest the successful management of cystitis rests, was relied on to relieve what I now feared was a case of this distressing disease, the cause of which I could not then determine. The constitutional effect of belladonna was evoked also, to mitigate the symptoms; and, finally, hot-water vaginal injections were employed for their well-known analgesic and antiphlogistic effects upon the pelvic viscera.

"At the beginning of the third week from the first appearance of the symptoms the patient complained of slight chilliness toward evening, and it was observed that this was followed by fever, the thermometer in the mouth registering 101°. These symptoms were interpreted to indicate the constitutional expression of the local inflammation existing in the bladder. Hence no special attention was directed toward them. The chilliness was repeated, however, on the third evening, and on the fourth day at the same hour reappeared as the prodrome of a marked rigor, followed by an abrupt rise of temperature to 103°, succeeded by sweating and a return to the normal temperature in about four hours, thus clearly demonstrating a well-defined periodicity of the febrile movement.

"Suspicion being now aroused as to the essential nature of the case, the patient was promptly placed on ten-grain doses of the sulphate of quinine to be taken every four hours with mercurial and saline purgatives, the latter being indicated by the appearance of the tongue and the confined state of the bowels, which was due not altogether to the opium administered, since this physical modifier had been exhibited both freely and simultaneously.

"At the end of four days from the administration of the first dose of quinine the patient was virtually convalescent. During this period no opiate was employed nor any other medicine but quinine taken, save an occasional dose of neutral mixture, chiefly for its sudorific effect. Nevertheless, the irritation of the bladder did not return, and the close of the week found the patient, although debilitated by the trying

ordeal through which she had passed, enabled to resume her accustomed duties."

Periodical Attacks of Frequent and Painful Urination and Vesical Tenesmus caused by Malaria.—My hospital clinical records contain this case in point: In the afternoon of each day the patient experienced a sense of heat and burning in the bladder and urethra, with a frequent and irresistible desire to urinate. Evacuation of the bladder, attended with a great deal of smarting and pain in the urethra, did not give complete relief, but left some vesical tenesmus which increased in severity as the bladder became distended. These symptoms persisted during the night and kept her awake; but toward morning her sufferings entirely left her, and she became quite comfortable until the next afternoon. This condition had existed for nearly two months, and accordingly her digestion had become impaired and her strength diminished. This was attributed by her to the want of sleep, and no doubt was due in part to this cause. The urine was examined and found to be normal except that it contained a slight excess of phosphates. She was carefully examined, and no evidence of organic disease was found.

While she always enjoyed full health and had been a vigorous woman, she had had an attack of malarial fever about six months before I saw her, and at the time this bladder trouble came on she said she had symptoms of her former ague. From the facts in her history I ventured to state to my class that this was a functional derangement of the bladder and urethra caused by malaria, which would promptly yield to judicious doses of quinine. I accordingly prescribed twenty grains of quinine to be taken between early morning and noon, to be followed by two-grain doses before meals, with four drops of Fowler's solution of arsenic after meals. She was ordered to report at the clinic the following week. She did so, and declared that she had been perfectly well since the first day she took the medicine. The quinine and arsenic, in small doses, were continued for three weeks, at the end of which time she reported herself

as having been well and free from all irritation of the urinary organs.

No change in the character of the urine could have occurred to produce such marked periodicity in the functional derangement of the bladder and urethra; moreover, the urine was found to be normal, and she completely recovered on the use of quinine.

CHAPTER XXXIV.

FUNCTIONAL DERANGEMENTS OF THE URINARY ORGANS CAUSED BY DISEASES OF OTHER PELVIC ORGANS.

Functional diseases of the bladder caused by disorders of the neighboring pelvic organs are frequently met with in practice. In this class the vesical trouble is secondary to some primary and more important affection, but the derangement of its function is often the most prominent and troublesome symptom ; hence it is important to understand its relation to the primary disease, in order to make a correct diagnosis and to treat such cases properly.

This class of functional disorders frequently resembles in history some of the organic diseases of the bladder, so that care is necessary to distinguish the one from the other. What I say upon the subject will have reference only to diagnosis. When we know that the bladder trouble is due to disease of some other organ, attention is at once turned to the primary malady. These facts must be borne in mind, and symptoms must not be mistaken for disease.

Diseases of the rectum affect the bladder sympathetically, and irritation and pain in the rectum from any cause affect it more or less. Chronic hæmorrhoids will cause frequent urination, and so will rectal fissure, especially after defecation. Abscesses in the neighborhood of the rectum will frequently cause retention of urine.

One very interesting case of this kind occurred in the practice of my friend Dr. Cushing. The patient had an abscess in the neighborhood of the rectum which caused retention of the urine, and this in turn caused acute renal

disease. After the bladder had been emptied and kept from overdistention for some time, the urine was examined and found to contain albumin and casts. She made a rapid recovery, and all evidence of kidney disease soon disappeared.

Very troublesome vesical irritation may come from ascarides. The itching of the anus and rectum caused by these troublesome little worms keeps up an almost constant desire to urinate. Children are most troubled with these parasites, but women often suffer in the same way.

Marion Sims points out the interesting fact that almost all cases of vaginismus are accompanied by an irritable condition of the bladder, and that, as the terminal fibers of the hymen often extend from the meatus to the vesical neck, cystospasm may in these cases be due to reflex nerve irritation. An attempt to catheterize these patients is as liable to cause spasm of the bladder as an analogous attempt to examine the uterus would be in producing vaginismus. In these cases the hymen should be excised, and the vaginismus treated after the usual methods.

Acute pelvic peritonitis and cellulitis cause great distress in many cases by their effect on the bladder. A constant desire to urinate without the ability to make sufficient straining effort to accomplish the object is very often observed in all these acute pelvic inflammations. The disturbance of the bladder is, of course, only a symptom of the primary and more important trouble, and simply requires to be mentioned here. The after-effects of pelvic peritonitis are what I at present especially desire to call attention to.

The adhesions formed by the products of the inflammation of the pelvic peritonæum are in some cases sufficient to prevent the normal filling of the bladder, and frequent urination then becomes a necessity. This derangement of function generally exists alone. The urine is retained without trouble up to a certain amount; it is passed without pain, and no vesical tenesmus follows evacuation. Unless the contraction of the bladder is great, and the frequent neces-

sity to urinate very troublesome, patients rarely consult a physician for it.

Paralysis of the bladder with retention may be caused by a peculiar condition of œdema, by which the detrusors are rendered powerless to act. It is usually caused by disease of the cervix uteri, parametritis, or peritonitis.

IV. DERANGEMENTS DUE TO OVARIAN AFFECTIONS.

In disease of the ovaries we sometimes find that the bladder suffers very much from deranged nerve action. The clearest and best account of this form of functional bladder trouble is given by Fothergill in his paper on Ovarian Dyspepsia, published in the American Journal of Obstetrics, January, 1878. In speaking of the derangement of the stomach and pelvic organs he says:

"It soon became clear that there was some condition existing which stood in a causative relation to both the dyspepsia and the uterine disturbance. That condition was quickly seen to be a state of vascular excitement in one or both ovaries, usually the left ovary. This condition Barnes terms 'ophoria.' In this state there is always more or less pain constantly in the iliac fossa, more rarely on the right, much aggravated at the catamenial periods, when the pain shoots from the turgid ovary down the thigh of the corresponding side along the genito-crural nerve. This painful state is otherwise known as 'ovarian dysmenorrhœa.' When pressure is made over this tender ovary during the catamenial flow, acute pain is experienced. Pressure also elicits pain during the intermenstrual interval.

"At the same time that acute pain is felt, evidence is furnished of emotional perturbation; the patient feels as if about to faint, or 'feels queer all over,' as some express it, and the changes in the patient's countenance speak of something more than ordinary pain. It is evident that there is a wave of nerve perturbation set up, which excites more than the sensation of pain. Commonly the patient feels sick and faint after the momentary pressure, and asks to be permitted to sit

down. If a careful physical examination be made, it will be found that there is an enlarged and tender ovary, which may sometimes be caught between the finger in the vagina and the fingers of the other hand applied to the abdominal wall of the ovary. Such manipulation elicits manifestations of acute suffering from the patient. Frequently the rectus muscle over the tender ovary is hard and rigid, so as to place the organ as perfectly at rest as is possible; just as we see the rectus stiffen and become rigid over the liver when there is a hepatic abscess, and thus to secure rest, as regards movement, for that viscus. . . .

"Not rarely, too, there is set up a very distressing condition—viz., that of recurring orgasm. This occurs most commonly during sleep—'the period *par excellence* of reflex excitability.' In more aggravated cases it also occurs during the waking moments, and this it does without any reference to psychical conditions.

"The centers of the pelvic viscera lie near together in the cord, and the condition of one is readily communicated to another. The brief recurrent orgasm affects the bladder centers, the call to make water is sudden and imperative, and must be attended to at once, or a certain penalty be paid for non-attention. This last is not a common condition, fortunately, but it is a source of great suffering, bodily and mental, when it does occur. The condition of the ovary also acts reflexly upon the uterus, and keeps it in a state of persistent erection and high vascularity, with the normal phenomena attendant thereupon."

It is evident that this form of bladder trouble can only be relieved by treatment of the ovarian disease, for which bromide of potassium and counter-irritation are very serviceable, with, of course, attention to the general health.

Symptomatology.—In all of these nervous affections of the urinary organs pain and a feeling of weight and uneasiness in the region of the bladder are usually present. Still, the most constant and distressing symptom is the frequent and painful desire to micturate, which the patient tries often to

relieve, a few drops only being passed at a time. Of course, there are varying grades of this malady, in some of which these symptoms are by no means so troublesome. In extreme cases, occasionally, when a little urine collects in the bladder, the pain and irritability are so intense that it is spurted out by a very forcible and painful contraction of the organ. The sense of weight and bearing down are most intense in the upright position. The pains may be confined to the neck or base of the bladder, or they may shoot in all directions. The suffering in micturition may be present at the beginning, but is usually most severe during and after the completion of the act.

The local pain and distress, with the frequent urination and unrest, react upon the general nervous system, thereby greatly aggravating the original disorder. This lowered systemic condition in turn affects the local trouble, and so the one is continually aggravating the other. In this way the patient, if not relieved, goes on from bad to worse, until the host of phenomena characteristic of nervous prostration and general ill health are developed.

In certain cases the sufferers are by no means so badly situated, but, sooner or later, time and neglect tend to produce these results. In some instances, again, the suffering gradually disappears, and the patient is restored to health without much aid from treatment. The abnormal condition appears to wear itself out.

Diagnosis.—The symptoms I have given are by no means pathognomonic of these affections, the same being produced by organic disease of the bladder, by calculi, and various other causes. The diagnosis must be made by exclusion. The first thing to do is to make a careful microscopical and chemical analysis of the urine. Not only can local organic trouble thus be discovered, but important knowledge as to the state of the general system obtained.

If no urinary abnormity is found, a careful external and internal examination of the organ itself should be made. A finger should first be passed into the vagina, and an endeavor

made to ascertain, by pressure on the vesico-vaginal septum, whether there is any abnormal sensitiveness of the vesical base or neck, or both. Then the sensibility of the mucous membrane should be tested by the introduction of a sound. If sufficient cause be not found in either the urine or the bladder, the case may be set down as one of pure neurosis, to be treated as I shall hereafter describe. Systemic conditions, such as hysteria or chlorosis, should be considered, as they point to a tendency to neurotic difficulties, liable to be localized.

Prognosis.—As a rule, the prognosis is favorable; but this, however, is not always so. The longer the affection has lasted, the more difficult it is to cure. Most cases may be cured in a few weeks' time, and even the most obstinate in a few months. The danger to the patient lies in the fact that continuance of the disorder is liable to bring on an organic lesion, and, whether this results or not, the reaction on the general system tends, in the worst cases, to produce hypochondriasis or even melancholia.

Causation.—These nervous affections of the bladder occur most frequently in those of the nervous temperament. A highly developed nervous system predisposes one to nervous affections of all kinds. Especially is this the case if the subject is not well sustained by a vigorous nutritive system. Those in whom the emotional elements predominate are more liable to nervous troubles of the bladder than those of a more intellectual type. Those with the neuropathic tendency or with the psychic diathesis are included in this class.

The exciting causes include all influences which depress or exhaust the nervous system. Mental action or excitement which tends to increase the excitability of the nervous system may derange the function of the bladder. Constitutional diseases which lower the tone of the whole organization also tend to produce the ailments now under discussion.

It is not possible to give any satisfactory explanation of the reason why the innervation of the bladder becomes deranged in some persons from causes which are in others in-

operative. It may be that those who are most susceptible to these causes are so because of some inherited sensitiveness of the pelvic organs which responds to the disturbing influences. This appears to be the case with those who suffer from irritation of the bladder resulting from ovarian disease. This is apparent from the fact that one affected with disease of the ovaries will suffer from derangement of the function of the stomach, while another having a similar ovarian affection will suffer most from frequent urination.

Regarding the causative relations of malaria to irritation of the bladder, all that can be said at the present time is that this *materies morbi* appears to act upon that viscus through the nervous system.

Treatment.—This may be classed as general and local. In pure neuroses, attention should first be directed to improving the hygienic condition of the patient. Cheerful company should be provided at meals and at other times, and there should be exercise suited to the strength of the patient, daily ablution, and proper regulation of diet. This latter should be simple and nourishing, and of a kind calculated to produce as little urea and urinary solids as possible. In cases where the urine is limpid, the opposite course is to be pursued. Pastry, irritating condiments, and stimulants, except in rare cases, should be prohibited. The exception to this is where a state of the system calling for stimulation exists. In such instances the irritation of the bladder produced by their use may be more than counterbalanced by the good they do the system generally. Tea is better than coffee, but neither is to be used in any great quantity.

The condition of the urinary secretion must be carefully watched, and anything abnormal quickly and judiciously corrected. Where there is any tendency to excessive acidity the effervescing waters, rich in carbonic-acid gas, will be found of use. The bowels should be kept moderately well open, but should never be irritated with active cathartic agents.

Tonics and medicinal stimulants are often of great value

when judiciously prescribed. Strychnine in very small doses does not, as might be supposed, aggravate the irritable condition of these organs. The nerve-tone being below par, this remedy, by gradually increasing it, is of great service, but in large doses it is undoubtedly hurtful, and should never be long continued. Quinine, iron, and the various simple and compound vegetable bitters act well in the cases where their use is indicated. If the irritation is extreme, various soothing emulsions and decoctions may be given by the mouth. Of these, preparations of marsh mallow, triticum repens, acacia, pareira brava, and buchu act well. Emulsio amygdalæ is much used and highly recommended by the German authors.

Some objections have been raised to the use of these drugs on the score that they increase the flow of urine, thus aggravating the local irritability. The fact is, however, that the presence of fairly normal urine in moderate quantity in the bladder seems to relieve rather than increase its irritable condition.

The local treatment may be as follows: A cupful of warm hop-tea containing from twenty to forty drops of laudanum may be injected into the rectum. Suppositories containing atropine or hyoscyamus act as well, if not better. Emulsions, decoctions, and infusions of cannabis Indica, hyoscyamus, belladonna, and other drugs of this class may be administered by the mouth, as the case may require. Good effects have followed the use of rectal injections containing chloral hydrate (grains xv to water ℥j or ℥ij). It may also be given by the mouth, but does not usually act so quickly or have such a direct local effect. The injection into the bladder of a solution containing morphine, followed by cauterization of the mucous membrane, is highly spoken of by Braxton Hicks. In this way he claims to deaden the reflex irritability of the membrane.

I must insist on this: that opium be used in such cases with great care, and never long continued. If this rule is neglected, it will lead many nervous patients to contract the opium habit, a disease which is worse than irritable bladder.

Debout recommends the use of bromide of potassium by the mouth, and also in suppository, combining with it in the latter tincture of opium and belladonna. I prefer hydrobromic acid to the bromide of potassium. I omit the opium.

When the trouble is due to masturbation, moral and mental influences must be brought to bear, as well as medication and regulation of diet and habits. In these cases the bromides will be of service.

When complicated with malaria, the treatment is usually simple and satisfactory. Quinine in full doses for one day, and then in small doses before meals for a week, will usually cut short the trouble and prevent its return. The digestive organs require attention when they are out of order, as they usually are.

When this affection occurs in connection with hysteria the original disease should be treated, not, however, neglecting the local trouble. When accompanying acute or chronic systemic diseases, it is only relieved when the primary ailment is cured, although the distress in the meantime may be greatly alleviated by the treatment already recommended.

Vesical Tenesmus and Frequent Urination due to Prolapsus and Inflammation of the Ovaries.—With prolapsus of the ovaries, and inflammatory affections of these organs, irritation of the bladder often occurs. This is illustrated by the following case:

A young girl of twenty-one, who was brought to me, complained of great pain in the pelvis, which was much aggravated by standing or walking. Her suffering was constant, but was tolerable when she remained in the recumbent position. She began to complain about six months before I saw her, and about the same time found that she was obliged to urinate too often, and that there was an uneasy feeling in the bladder most of the time—afeeling as if it had not been fully evacuated.

She was much worse at her menstrual periods. Upon a thorough examination I found both ovaries prolapsed, slightly enlarged, and exceedingly tender, though in every other

respect she was perfectly well. In consultation with her physician, a course of treatment for the ovarian disease was decided upon. This was fully and faithfully tried for over a year, but at the end of that time she was worse. She was then quite impatient, being very nervous and irritable from her confinement and suffering due to the bladder irritation. She could not urinate without getting up, and the erect position increased the ovarian pain. The ovaries were still prolapsed, and just as tender—in fact, more so than they had been.

The complete failure of treatment up to this time indicated that removal of the ovaries was the only thing that promised to give her relief. Accordingly, the ovaries were removed, she made a rapid recovery from the operation, and was completely relieved not only from her ovarian pain but also from the frequent urination and vesical tenesmus. It should be stated that at no time was there any evidence of cystitis found upon frequent and careful examinations.

CHAPTER XXXV.

ORGANIC DISEASES OF THE BLADDER.

Having treated of the functional diseases of the bladder, I come now to the organic which naturally fall under the care of the physician. Under this head I shall discuss inflammatory affections.

Well-defined typical inflammation presents during its course certain peculiarities which are characteristic of it, and without the existence of which the disorder can not be called true inflammation. Inflammation, however, varies in character with the tissue or organ involved, and the extent or intensity of the disease; and, while there is really but one process of inflammation, its products must necessarily vary greatly, as that process is often interrupted, prolonged, or modified in various ways. Its divers grades or forms are distinguished as acute, chronic, catarrhal, interstitial, suppurative, croupous, diphtheritic, and gonorrhœal. The rare forms, and those requiring surgical care, will be omitted.

Before entering upon the consideration of cystitis in its many forms I shall speak of hyperæmia and hæmorrhage of the bladder. This latter affection might more properly, perhaps, be considered under another head, but it is so closely connected with hyperæmia and inflammation that I prefer to treat it here.

Hyperæmia.—The hyperæmia of the mucous membrane is the first morbid change observed, and with it disorders of innervation, as is evidenced by derangement of function and sensation. In many cases, however, the vascular engorgement involves the whole organ.

In hyperæmia of the mucous membrane of the bladder the blood-vessels are distended, and becoming prominent and apparently more numerous, give to it a bright-red color. The arterioles are the first to be affected. If the hyperæmia is not marked, or is produced by some transient cause and not aggravated, it may pass off in a short time, and leave the membrane in its normal condition. If it is of a severe type, however, rupture of some of the vessels may occur, the hæmorrhage taking place either on the free surface of the membrane or beneath its epithelial layer. Should this condition continue, the hyperæmia which began in the arteries extends to the venous side of the circulation, and the vessels become more prominently and uniformly distended. The congestion may also begin on the venous and extend to the arterial side, as in sudden interference with portal circulation. As a rule, however, it begins in the arteries. These facts have been discovered by the use of the cystoscope.

A clear distinction must be made between the acute congestion of which I am now speaking (and which is chiefly confined to the smaller vessels) and passive hyperæmia with a varicose or hæmorrhoidal condition of the veins about the neck of the bladder. This hæmorrhoidal condition I shall speak of later.

Symptomatology.—The symptoms of acute hyperæmia of the bladder, as a rule, occur suddenly, frequent but painless urination being the principal one. There is often a sense of heat and heaviness in the region of the bladder, which is greatly aggravated by standing or walking. This symptom is more pronounced when the entire organ is congested and the large vessels beneath the mucous membrane are affected. When the urethra is involved, the patient complains that the urine "scalds" her.

The general system is not disturbed—i. e., the pulse and temperature remain normal, or nearly so, unless the congestion is caused by malaria, which is often the case. The physical signs are mostly negative. The composition of the urine is unchanged, save for a possible excess of mucus, and a few

blood-globules present. There may be some tenderness on pressure over the bladder. The endoscope (when there is an opportunity to use it, which is very rare in this trouble) shows an increased redness of the mucous membrane, with occasionally an excess of mucus on its surface.

Diagnosis.—The diagnosis has to be made by exclusion, the natural history of the affection having in it nothing pathognomonic. It is liable to be confounded with sympathetic or other functional derangement of the bladder, caused by sudden dislocations of the uterus or by pelvic inflammation, such as pelvic peritonitis and its results. The former can be excluded by an examination of the pelvic organs, and the latter by the constitutional symptoms of inflammation and the signs of such pelvic disease.

Causes.—The causes of hyperæmia of the bladder are exposure to cold (especially during the menstrual period), wetting the feet, overexertion in walking or using the sewing machine, excessive venereal indulgence, constipation of the bowels from torpor of the portal circulation, the too free use of stimulants, and the eating of improper articles of food.

Treatment.—The treatment should be directed to equalizing the circulation, diaphoretics, warm, stimulating foot-baths, hot applications over the epigastrium, and, above all, rest in the recumbent position, or, better still, with the pelvis elevated. If the bowels are confined, they should be emptied by saline laxatives. When there is much irritation of the bladder, causing frequent urination and vesical tenesmus, conium with camphor should be given, or suppositories of belladonna and stramonium introduced into the vagina. The vaginal douche of hot water gives relief in some cases and should be tried. Under this treatment the trouble will usually pass off in a short time. It may, however, go on to the development of cystitis. In the majority of cases there is some disease or derangement of the nutritive system and a consequent abnormal state of the urine. This condition should be corrected by appropriate medication.

Hæmorrhage from the Bladder, or (if I may be allowed to

coin a word) "cystorrhagia," is usually due to some important disease of that organ, and is therefore rather a symptom than a disease. For this reason I shall at present confine my remarks to hæmorrhage when caused by acute congestion—which I have just considered—or to varicose veins of the bladder.

The bleeding may take place from the free surface of the mucous membrane, and mingle at once with the urine or coagulate in the bladder. It may also take place beneath the surface of the mucous membrane, and form ecchymoses, like the spots seen beneath the skin in purpura. There is also a condition known as hæmoglobinuria, in which only the coloring matter of the blood is found in the urine, no blood-corpuscles being present.

The quantity of blood varies greatly in different diseases, and in the same disease in different persons. In congestion of the bladder blood-globules will often be found in the urine only upon microscopic examination, while at other times the urine will have the appearance of being all blood. Again, the blood may coagulate, and be passed in clots, or the coagula may remain in the bladder, finally break down, and be passed as a chocolate-colored or blackish matter.

Symptomatology.—The symptoms of hæmorrhage do not differ from those of congestion or the onset of cystitis, except when small clots form, distending the urethra, and causing pain in urinating. It is very rare that bleeding from these causes is sufficient to prostrate the patient.

As bleeding may take place at any point in the urinary tract, it is important always to locate the hæmorrhage. When coming from the bladder in any quantity, it is usually passed in small clots, and is seldom so intimately mixed with the urine as when it comes from the kidneys or ureters. This statement, however, is not exact, and at best gives but a probable idea of the true facts. To complete the diagnosis, we must resort to something more trustworthy. Sir Henry Thompson gives a very ingenious method for determining as to whether pus found in the urine comes from the kidneys or

bladder, and Van Buren and Keyes advise the same plan for detecting the source of hæmorrhage.

The method is this: "A soft catheter is gently introduced first within the neck of the bladder, the urine drawn off, and the cavity washed out very gently with tepid water. If the water can not be made to flow away clear, the inference is that the blood comes from the cavity of the bladder. If it flows away clear, then the catheter is closed for a few moments, the patient being at rest, and the few drachms of urine which collect may be drawn off and examined. The bladder is now again washed out, and if, after a single washing, the second flow of injection is clear, while the drachm of urine was bloody, the inference is again complete that the blood comes from one or the other kidney."

When it is known that the patient has had no kidney disease, nor symptoms of renal calculi, it may be inferred that the blood comes from the bladder. Hæmorrhage from the urethra might mislead, but is easily detected if it is remembered that in this case bleeding occurs between the acts of as well as during micturition. It may also readily be discovered with the endoscope, provided the tube be not too large.

Causation.—The causes of vesical hæmorrhage or cystorrhagia are: congestion, varicose veins, villous cancer, lesions of structure, as in ulceration and sloughing of mucous membrane from injury or cystitis, and obstruction to or interference with the portal circulation. This may possibly explain the fact that hæmorrhage occasionally occurs in those suffering from malaria. Perhaps the vesical hæmorrhage occurring in the intense heat of summer in the tropics may be thus explained. In malaria the obstruction to the circulation through the portal system, acting as a predisposing cause, or the intense congestion of all the internal organs during a chill or from exposure to cold, would certainly tend to produce cystorrhagia.

In purpura, the eruptive, typhus, and typhoid fevers, bleeding from the bladder may occur; but, as it is here

secondary to the main disease, nothing need be said about it in this connection.

The most marked predisposing cause of cystorrhagia in women is the hæmorrhagic diathesis, which is not uncommon among chlorotic subjects.

Treatment.—The treatment must largely depend on the cause. In all cases rest in the recumbent position should be insisted upon. A large number of hæmostatics have been recommended, and some of them—such as aromatic sulphuric acid, tannic and gallic acids, in moderate doses—are doubtless of some value. I have, however, depended chiefly on doses of conium sufficiently large to quiet the desire to urinate, and alkaline diluents to render the urine non-irritant when it was found to be excessively acid. Hydrastis canadensis, and ergot, singly or combined, I have found useful.

When the hæmorrhage is so free as to excite fears of prostration, ice may be employed. Small smooth pieces should be introduced into the vagina at regular intervals as long as the patient can comfortably bear it. Ice may also be applied to the hypogastrium.

When the blood coagulatès and forms a large clot in the bladder, it should be allowed to remain until it breaks down and comes away of itself. The experience of surgeons is that there is much more danger in attempting to remove the clot than in letting it alone. There are two dangers in removing coagula from the bladder. One is, that doing so will almost certainly start the bleeding again; and the other is, the liability to injure the bladder and cause inflammation. Let the clots take care of themselves, keeping the patient quiet and comfortable (with opium, if possible) until the coagula are disposed of. Limewater has been recommended as a solvent of blood-clots by Dr. J. H. Ledlin, of Pittsfield, Illinois, and it seems to have acted well.

Allusion has been made to varicose veins of the bladder, by some called "hæmorrhoids of the bladder." This condition is chiefly found in pregnant women, especially those who have borne several children. The cause is interruption

of the venous circulation by pressure of the gravid uterus. The veins of the anterior vaginal wall, introitus vulvæ, and labia will often be found in the same condition. Occasionally prolapsus of the bladder will also be found.

This affection gives rise to those symptoms of pelvic distress and frequent urination that are so troublesome in some pregnant women. It must be kept in mind, however, that the same symptoms may come from pressure, which does not produce varicose veins. If it is found that the urine is normal, and the patient feels relieved to some extent in the recumbent position, this trouble may be suspected, and, if the indications are sufficiently urgent, a local examination should be made which will reveal a varicose condition of the vessels of the urethra and vaginal walls, and from this it may be inferred that the same condition exists in the bladder.

This disorder is relieved or passes off altogether after confinement, and usually the best that can be done is to give rest and try to make the patient comfortable until the end of her "term."

Should the trouble continue after delivery, especially if there is cystocele or prolapsus of the bladder, much good may be done by restoring and keeping the organ in place. This can best be accomplished by using the cotton pessary or a roll of marine lint packed loosely into the vagina, like a tampon. The patient can be instructed to use this herself. Attention should be given to the general health, and particularly to the state of the bowels and portal circulation. Rest in bed, and the use of cool water as a vaginal injection, may also be of service.

Should hæmorrhage occur from this condition of the veins, it may be treated as described in the discussion of that subject.

CHAPTER XXXVI.

CYSTITIS.

Cystitis is much more common among women than is generally supposed. It is necessary, therefore, to inquire carefully into the ætiology, pathology, and therapeutics of this malady, which causes great suffering on the part of the patient, and taxes the highest skill of the ablest physicians and surgeons.

To the several forms, grades, or degrees of this disease various names have been given, such as acute, subacute, and chronic cystitis, cystitis mucosa (catarrh of the bladder), interstitial cystitis, pericystitis and epicystitis, and croupous, diphtheritic, and gonorrhœal cystitis. This medley of names should not be allowed to lead to confusion, but this fact should be firmly fixed in the mind: that, with the exception of the last three (the ætiology and pathology of which are somewhat different), they are all simply steps or stages in one general process. Thus a patient may have received an injury of the bladder by the use of a catheter, causing an acute cystitis. This may end in convalescence, or merge slowly into the more chronic form, having, very likely, as an intermediate stage, catarrhal cystitis. This, too, may go on to recovery; but, if the process extends and its severity increases, ulceration takes place, and the submucous and intermuscular tissues become involved, producing interstitial cystitis. If the inflammation extends still further, and involves the serous coat of the bladder, either by extension or ulceration, with or without perforation, pericystitis or epicystitis appears. I hope I have thus made clear the fact that names are only

given to denote the degree of intensity of the inflammatory process, and the character and extent of the tissue involved.

Inflammation of the mucous membrane alone is by far the most common form, and hence, in using the term cystitis, reference is usually made to inflammation of that membrane only. When other tissues are involved, or the character of the disease is peculiar, some qualifying word is added to distinguish it.

The existence of acute inflammation of the bladder other than that due to local causes is emphatically denied by many authors. The statements made are usually too broad and sweeping to be sustained by the facts observed in actual practice. I believe that cases of acute cystitis from exposure to cold, wet, and other causes do occur. It must, however, be admitted that such instances are very rare, and some that have been considered as acute idiopathic cystitis may have been but a development of acute inflammatory disease from a pre-existing abnormal condition.

It is also possible that those who deny the existence of acute idiopathic cystitis may base their belief upon the fact that in what is called acute inflammation of the bladder all the phenomena of well-defined inflammation are not present, while others consider hyperæmia of the mucous membrane and derangement of bladder function all that is necessary to constitute a cystitis. Thus the apparently different opinions that exist among authors upon this subject may arise from conflicting views as to what really constitutes inflammation.

I prefer to class this condition (of congestion, hypersecretion of mucus, abnormal exfoliation of epithelium, and irritability) among the inflammatory affections, and call it acute cystitis. Such an affection as this is met with in every-day practice, and I know of no better name for it.

Pathology.—As acute cystitis soon terminates in resolution, or merges gradually into chronic cystitis, I think it best to give the pathology of both diseases at once, they being, as I have already said, simply different in degree of intensity and duration.

The morbid anatomy of cystitis is the same as that of inflammation of mucous membranes in other parts of the body. In the more acute forms the membrane is swollen and relaxed and of a bright or deep red color, from hyperæmia. The surface is partially or entirely covered with a thick, tenacious mucus. There is exfoliation of the epithelium, as shown by the partially denuded condition of the membrane, especially at the top of the rugæ, and pus and loose cells are found in the sulci between the folds.

In some instances, especially in cases of acute cystitis resulting from extreme overdistention due to mechanical or other causes of retention, the whole or only a part of the mucous membrane of the bladder may slough or separate and be thrown off. This is more apt to occur when the retention and overdistention are caused by accidents of the puerperal state or during delivery. That the separation of the mucous membrane is not due to direct injury caused by the child's head or instruments carelessly used, but to the effect of overdistention, is shown by the fact that the vesical neck, which is subject to the most direct injury, seldom shows separation of its mucous membrane. That injury to the organ may predispose to separation, or even determine it when already predisposed to it by some other cause, there can be no doubt. Most of these cases of separation of the mucous membrane have occurred in women, and almost all followed delivery. The bladder which has participated in the general congestion of the pelvic organs, incident to the puerperal state, is in a condition to respond to injuries causing such separation to take place.

The manner of its production is probably as follows: A woman at full term is delivered of a healthy child after a long and tedious labor, with or without the use of instruments. The child's head or the forceps may have done violence to the urethral mucous membrane by crowding the urethra against the unyielding pubic bones. Swelling of the mucous membrane results, and retention of urine (if the patient be not relieved by the catheter) follows and persists for

a varying length of time. The doctor, the nurse, and the patient herself are often led to believe, from the constant or intermittent dribbling of urine, that there is an irritable condition of that organ, with incontinence. The truth is, that this dribbling (stillicidium) is almost a certain sign of an overdistended bladder, and if the patient is not relieved the distention will gradually increase. The organ having reached its limit of distention, or being stretched to its utmost, the pressure within is so great as to cut off the supply of blood to the submucous tissue, and thus to the mucous membrane itself. This is more readily accomplished, as the muscular fibers are pulled apart and the mucous membrane thereby allowed a certain amount of bulging, by which its blood supply is seriously interfered with. If the distention be relieved early enough, nothing worse than an acute cystitis results; but if not relieved, death of the whole or part of the membrane occurs, and it is sooner or later thrown off.

This ailment is not a common one, and though cases may seldom be met, I desire to lay stress upon the great importance of paying strict and individual attention to the condition of the urinary organs in pregnant and parturient women. The catheter can tell more of the condition of the patient's bladder in such cases than any nurse, and can do no harm whatever when a clean soft instrument is used with care.

Symptomatology.—The various forms of cystitis being simply stages of the same disease, I shall speak of their symptoms all under one head.

They may, for convenience' sake, be divided as follows: 1. Symptoms referable to the organ or its contents. 2. Symptoms referable to neighboring organs, that suffer either from sympathy or through direct extension. 3. Symptoms referable to various conditions of the general system, as (*a*) The vascular system. (*b*) The digestive tract. (*c*) The cutaneous surface. (*d*) The nervous system—cephalic and subcephalic.

1. The symptoms referable to the organ itself are chiefly derangement of function—viz., pain, tenesmus, and frequent urination. The indications vary in severity according to the

extent and intensity of the cystitis. In the mildest form of the trouble there is frequent desire to pass water, which often comes with unusual force. Micturition is followed by a desire to strain, called vesical tenesmus, as if the organ had not been fully emptied. In the more acute cases this gives rise to the most intense agony, the patient remaining on the vessel for hours at a time. The sensation of a few drops of urine remaining in the bladder may pass off in a few moments, but, as a rule, returns after each micturition.

The condition of the urine in acute cystitis is of importance, but if reliance is placed upon it alone for a diagnosis there will be many disappointments. In the primary acute form the gravity is little if anything below the normal, and if there is marked fever, may rise as high as 1030. In acute attacks ingrafted on a chronic state, the gravity is usually low. When the specific gravity is low in acute cystitis, if not dependent on the diluent drinks and diuretics given, it is probably due to a slight sympathetic hyperæmia of the kidneys.

The reaction of the urine when the affection is not due to or accompanied by retention is at first usually acid. If there be retention, the reaction is usually alkaline, due partly to the fixed alkali of the mucus which is present in excess, but chiefly to the ammonia disengaged in the breaking down of the urea. The color is but slightly altered. The presence of a little blood may give to the urine a smoky tint, and if decomposed it will look hazy, and perhaps contain sparkling crystals of the triple phosphate. In the chronic form the urine is of a pale, dirty-yellow hue, and may be of a deep red, from the presence of considerable blood. The odor is of an ammoniacal type if the urine be decomposed; otherwise it is normal. It has not only an ammoniacal but a peculiar pungent odor of flesh. This is usually known as *organic*, from the fact that it is due to the amount of organic material present.

The sediment in acute cystitis is usually mucus, sometimes pus (white and clinging to the bottom, or somewhat

flocculent). It may be tinged with blood, or rendered denser and whiter from the presence of the amorphous and triple phosphates. In chronic cystitis the sediment is commonly heavy and of a dirty-brown or brownish-yellow color. Flakes of pus, shreds of tissue, as well as blood and epithelial elements, cause it to vary greatly in different cases. When the intense alkalinity of the urine has rendered the pus gelatinous, the sediment is seen as a ropy mass that clings tenaciously to the bottom of the vessel. Microscopically, this sediment presents a varied and interesting appearance. In the acute form numerous fibrillæ of mucus, a few pus-corpuscles, and possibly blood-globules are to be seen, and, if decomposition has taken place, the amorphous and triple phosphates.

Upon testing the urine chemically, albumin will be found in proportion to the amount of pus or blood present. If renal disease coexist, the amount of albumin will be greatly increased.

2. Symptoms referable to neighboring organs: These are not especially marked. In some cases, with the intense vesical tenesmus, there may exist an irritable condition of the rectum, with some tenesmus and pain at stool. The uterus is often congested, which causes a free leucorrhœa; subinvolution frequently occurs after the confinement of those who have had cystitis during pregnancy. Extension of the inflammation in extreme cases may cause metritis and pelvic cellulitis and peritonitis. This only takes place in old cases. The symptoms thus arising will be characteristic of the disease of the organs or tissues involved.

Menstruation may be variously disturbed; menorrhagia, metrorrhagia, or amenorrhœa, resulting either from congestion, inflammatory extension, or reflex nervous influence, may occur. Neuralgia of the uterus or ovaries may also be produced in this way. I have just said that subinvolution of the uterus is almost sure to follow a pregnancy occurring during the existence of a vesical inflammation, and I am inclined to believe that the same result is produced in some cases by an acute cystitis following delivery.

3. Symptoms referable to disturbances of the general system: These symptoms may be due to reflex nervous influence. For convenience' sake I shall first consider—

(*a*) *The Vascular System.*—There is not, as a rule, much disturbance of the correct action in acute cystitis. Although there has been much dispute among authors as to how and by what means the general poisoning is caused, there seems to be no question as to whether such a poisoning really does take place. General systemic effects may be produced by two separate blood conditions. They are, first, abnormal ingredients existing in the blood, and, second, a poor condition of the blood itself (anæmia).

(*b*) *The Digestive Tract.*—Anorexia, especially at the morning meal, is a common accompaniment of chronic cystitis. In some cases this is the only meal where the appetite does not invite the patient to partake. A longing for peculiar foods is also very common, the patient often having lost the desire before the article in question reaches her. The common symptoms of disordered digestion are usually present, and the affection may be either of the nervous type or of the chronic catarrhal form, though it is usually a mixture of both. If, as is believed, the poisonous material absorbed from the bladder and the non-eliminated urinary salts find vent through the alimentary canal, we have no trouble in discovering a cause for the catarrhal disorder. The nervous disorders are readily explained by the effects of the abnormal condition of the blood, and the broken and sleepless nights which interrupt and retard the nutrition of the nervous system.

The bowels are usually irregular and constipated, and require laxatives or daily enemata to open them. In chronic cases this costiveness is occasionally interrupted by a profuse watery diarrhœa, which would seem to be an effort of Nature to relieve the blood of its abnormal contents, as I have already said. It may last for days or only for a few hours, and the discharges are usually rich in the carbonate of ammonia. The septicæmic diarrhœa differs usually in the great prostration accompanying it, the character of the stools

(black or greenish black, and very offensive, the organic odor quite or partly hiding the ammoniacal odor), and the fact that it is usually preceded or accompanied by chills, fever, and sweating. If checked too abruptly, head symptoms, mild muttering delirium, etc., are likely to follow.

The results of imperfect digestion are seen in the poor, unhealthy condition of the patient's flesh and skin, and all the signs of malnutrition present.

(*c*) *The Cutaneous Surface.*—The skin of patients with chronic cystitis is usually sallow, loose, and has a lifeless feel. Indeed, one might almost make a diagnosis from the complexion alone. Sweating of the palms of the hands and soles of the feet is common. In low states of the system the patients are especially liable to night sweats, and the perspiration sometimes has a urinous odor. I have already spoken of the septicæmic diaphoresis.

(*d*) *The Nervous System.*—I shall first consider the symptoms appertaining to the brain and its function, and then to the subcephalic nervous system. The brain symptoms in the early stages of cystitis are not diagnostic. They are the same as come from pain and loss of sleep from any cause, increased irritability, and depression from weakness.

There is a peculiar brain condition, supposed by some to be caused by cerebral anæmia; others attribute it to a peculiar poison circulating in the blood. By anæmia of the brain in this connection is meant not only lack of blood in that organ, but an exceedingly impoverished condition of the blood circulating there. Those remedies that tend to lessen the amount of blood in the brain, as bromide of potassium and ergot, produce most unpleasant symptoms in these cases, such as dizziness and fainting. Medicines which act in a manner to congest the brain, if given in small doses, improve this condition, as also do the ferruginous tonics, especially iron by hydrogen. From this it would appear that this peculiar condition is due more to the amount and imperfect constitution of the blood circulating in the brain than to the absorbed or non-eliminated abnormal matter.

Diagnosis.—The diagnosis of cystitis is generally easy in marked cases, but in mild attacks care is necessary to distinguish it from other conditions that cause similar symptoms.

Frequent urination occurs in many other troubles, such as prolapsus uteri, adhesions from pelvic peritonitis, abdominal tumors, and in various neuroses. Pregnancy, also, sometimes gives rise to an annoying frequency of the act. That arising from prolapsus is worse when the patient is standing or walking, and is relieved wholly, or to a great extent, by the recumbent position; while in cystitis, position makes no marked difference.

I have seen one very interesting exception to this general rule. The patient had a complete prolapsus for many years, and when in the erect position she could retain the urine for an ordinary length of time, but when she was reclining the most urgent desire to urinate came on, and she could only retain a very small quantity of urine. The cause of this I found to be inflammation of the neck of the bladder. When in the upright position the urine settled down in the dependent portion, but while recumbent the pressure came on the tender part.

In adhesions from pelvic peritonitis, abdominal tumors, and pregnancy, the desire to urinate only comes on when the bladder is partly filled, and is about the same day and night. Frequency of urination is not usually accompanied by tenesmus, except when due to cystitis. In the various forms of vesical neuroses frequent urination is very irregular, the patient at times being almost entirely free from it, and at other times very much troubled.

The frequent and painful urination of cystitis may be simulated by urethritis and other painful, irritable conditions of the urethra. The distinction can be made, usually, from the fact that in urethral disease there is no vesical tenesmus, or, if any, it is much less than in cystitis. There are acute pain in the act of urination and a burning sensation in the urethra, which sometimes cause sympathetic vesical tenesmus; but when this latter passes off, the bladder will tolerate distention to the fullest extent.

The urine should be carefully examined and the results as carefully considered. Implicit dependence, however, must not be placed on the condition of the urine. Acute or chronic congestion may produce considerable mucus that is sometimes mistaken for pus that has become gelatinous by the action of strong alkali. Pus may be present in the urine from suppuration of the upper urinary passages (pyonephrosis, renal abscess, and pyelitis), or from abscesses of neighboring organs or tissues opening into the bladder, as in colitis and pelvic cellulitis. When there is doubt on this point, Sir Henry Thompson's method of procedure, as recommended by Van Buren and Keyes, for detecting the source of blood should be tried.

A differential diagnosis between cystitis and pyelitis by means of the urine alone is almost an impossibility, especially in the later stages of the former. Thompson's method, the endoscope, and the presence or absence of a tumor in the loins, with the general symptoms, must be the guides. No dependence can be placed on the epithelium, as transitional forms from the bladder are very likely to be mistaken for the normal epithelium of the renal pelves, and lead to error.

To make a positive and reliable diagnosis, resort must be had to physical exploration of the organ. The methods of exploration are palpation, percussion, and auscultation of the abdomen; examination of all the pelvic organs by the touch and speculum; and, lastly, exploration of the bladder by the catheter or sound.

By palpation and percussion of the abdomen, tenderness and distention of the bladder may be detected, if either exist. By the same means it may be ascertained whether the bladder is contracted and its walls thickened, rigid, or relaxed. Auscultation will possibly reveal friction sounds in cases where inflammation has extended to the serous coat, and caused roughening by exudation on the peritoneal surfaces. These may seem to be rather delicate points in examination, but in obscure cases one must use all the means that

can give the slightest evidence. Examination of the pelvic organs by touch will detect any disease of these that may either cause or complicate the cystitis. Displacements and inflammatory affections of the uterus, vagina, or rectum, pelvic peritonitis, or the products of a former attack of that disease, ovarian diseases, and tumors, should be carefully sought for, and, if present, their relations to the vesical trouble carefully studied.

Cystitis produced by or producing pelvic cellulitis and peritonitis has the same symptoms as ordinary purulent vesical inflammation, plus those of well-defined pelvic inflammation. There are usually pain and tenderness of the pelvic organs, and the symptomatic fever of local inflammation.

In those cases where, from gluing together of the pelvic organs, the bladder walls are separated and kept upon the stretch, incontinence often results, sometimes overdistention with dribbling. In such forms the cystitis may be entirely secondary to the pelvic adhesions, and consequent vesical distention. The urethra should be examined with care, for some of its diseases present a natural history closely resembling that of some vesical affections.

By a careful use of the catheter or sound introduced into the bladder, the degree of tenderness of that organ can be determined, and the presence of foreign bodies, such as a stone in the bladder, can be excluded. The sound being in the bladder, the finger may be introduced into the vagina, and the posterior and inferior walls be examined as to their thickness and tenderness.

In suspected cystitis the neck of the bladder ought always to be examined with a view of detecting ulceration and fissures at that point. These fissures give rise to symptoms very closely simulating cystitis, and the differential diagnosis can only be made by the endoscope. This instrument affords the only means of ascertaining the exact appearance of the interior of the bladder. All chronic and complicated cases requiring a physical exploration belong to the surgeon, and what has been said on the subject is given to guide the physi-

cian in determining the limits of his ability to care for given cases.

I have called attention to the fact that surgical treatment is often injurious, and that many cases, especially the acute forms, are better managed by the physician than by the surgeon. I must here say that chronic and complicated cases should at once be placed in the care of a competent surgeon.

Causation.—The cause of acute cystitis may for convenience be classed under five heads, each of which will be studied separately:

1. Direct injuries, such as blows in the vesical region, falls, fractures of the pelvic bones, violent copulation, sudden uterine displacements and pressure therefrom, contusions and injuries during labor, foreign bodies, rough catheterization, and overdistention from retention of urine. 2. Abnormal urine. 3. Inflammation of adjacent organs. 4. Constitutional diseases. 5. Drugs, improper food, and the virus of gonorrhœa.

These causes also pertain to chronic cystitis, whether it begins as an acute or subacute affection.

1. *Direct Injuries.*—Blows over the vesical region, falls, and especially fracture of the pelvic bones, caused by some great force, usually produce acute inflammation of the bladder, with or without rupture of that organ. The bladder, when full, is, of course, more readily ruptured than when empty, rupture in the latter condition being almost an impossibility. This item of knowledge can be turned to practical use in traveling, either by rail or water, by remembering to frequently empty the bladder. In cystitis from severe and direct injury, even without any perceptible traumatic lesion of the mucous membrane, there is apt to be marked hæmorrhage—much greater, indeed, than in cystitis from other causes.

Sudden displacement of other pelvic organs, as the uterus, may act in two ways: first, by pressure on the bladder, or by dragging it out of place; second, by blocking the urethra by pressure. These displacements may be due to falls or blows,

and it is not an uncommon occurrence for the gravid uterus to topple over by its own weight. Supposing a retroversion of the gravid uterus, the cervix would crowd the urethra against the pubes, while the utero-vesical ligament would drag the upper part of the bladder downward and backward. Even after the uterus has been replaced, and the pressure on the urethra removed, with relief of the vesical overdistention, the retention is likely to persist, and overdistention recur, for by the pressure the urethra becomes much tumefied, and the muscular and elastic tissue of the vesical walls overstretched and partly paralyzed. If the distention has been great and prolonged, there may be partial or total sloughing of the vesical mucous membrane. These causes give rise to secondary cystitis, and such cases fall under the care of the surgeon. They are referred to him to make the ætiology complete.

In retention of urine, and consequent overdistention of the bladder during or after labor, either from injury or carelessness, acute cystitis is very apt to occur. Here injury of a serious nature may be done to the urethra by pressure against the pubic bones by the child's head, with or without the intervening soft cushion of the anterior uterine lip. This is especially the case in slow, tedious labors, where the pressure is almost continuous. The soft-rubber catheter is the only one that for years I have used, for I regard the old female silver catheter as the most dangerous instrument I have ever seen. It should be discarded forever. In cases where the bladder had been perfectly healthy, and the catheter passed a number of times by way of experiment, the points of membrane with which the instrument had come in contact were abraded and congested, thus showing the danger attending the unskillful use of this instrument. If the frequent introduction of it into a healthy bladder produces these results, how easily must the bladder of a pregnant woman be inflamed under such treatment, for the organ has been for a time more or less congested, and during labor perhaps severely bruised!

The question has been raised as to whether the irritation and inflammation following catheterization in some cases are not due to the introduction (during manipulation) of air, either pure or containing germs that will cause decomposition of the urine. The experiments of P. Dubelt, in which the air was injected into the bladder, show that it is perfectly harmless. Moreover, the same experimenter found that the injection of decomposing urine into the bladder did little or no harm, unless the mucous surface was abraded. Whatever may be the effect of such things on a healthy bladder, I do not doubt but that the introduction of germs by means of air or a dirty catheter, decomposing urine, or the rough or too frequent use of a catheter, would produce an acute exacerbation in an organ already diseased.

Forcible and excessive copulation is a positive exciting as well as predisposing cause of acute or subacute cystitis, and, if persisted in, a chronic inflammation of the bladder is usually the result.

2. *Abnormal Urine.*—Abnormal urine will, I think, excite acute inflammation in a perfectly healthy bladder in time. In a bladder, however, that is suffering from chronic congestion, in one whose walls bear deposits of tubercle, in cases where some slight degree of inflammation already exists, then abnormal urine may and does give rise to marked inflammatory trouble. As a rule, however, inflammatory vesical disease precedes urine decomposition. In cystitis following overdistention the retained urine, being mixed with mucus thrown out by the irritated and tense mucous membrane to shield itself, rapidly decomposes, and still further aggravates the disordered condition of the membrane.

Women, sometimes from a feeling of false modesty, more often from the lack of opportunity, retain their urine until the bladder is distressingly overdistended, and the urine partially decomposed. Of course this is wrong, and can generally be avoided, but is nevertheless a frequent cause of disease of this organ.

Where there is considerable suppuration of the upper

urinary passages (renal abscess, pyelitis, or pyonephrosis), the acid urine loaded with pus has, or seems to have, an irritating effect on the vesical mucous membrane, and in some instances probably induces a cystitis, and certainly aggravates one when already existing.

Deposits of the amorphous phosphate of lime, or of the ammonio-magnesian phosphate, often greatly aggravate and render serious a previously mild congestion, but seldom if ever produce acute inflammation in a healthy bladder. The same may be said also of uric-acid gravel and other crystalline urinary sediments, they being at most only able to produce some hyperæmia of the membrane with a little excess of the mucous secretion, but if long continued will cause cystitis.

To show how some of these causes may combine to produce cystitis, let me take, for example, the bladder of a pregnant woman which has for some time shared in congestion with the other pelvic organs. Retention and slight distention of the bladder occur from some cause; a physician attempts to pass a metallic catheter, does it roughly and rapidly, and relieves the viscus of its contents. A slight catarrh of the mucous membrane, the surface of which is somewhat abraded, ensues. By the catalytic action of the mucus present in it, the urine is rapidly decomposed, the process being often aided by germs introduced with the catheter. Carbonate of ammonia, having been set free from the broken down urea, assists in alkalizing the fluid, precipitating the amorphous phosphates thereby, and forming, with the phosphate of magnesia already present, the ammonio-magnesian, or triple phosphate. The urine is further alkalized by the alkali of the mucus. The bladder walls not having fully regained their tone, a little decomposed urine remains after each micturition, and aids in decomposing that which is next secreted. The mucus increases in amount, the ammonia is more rapidly set free, and the mucous membrane more and more irritated, until a true acute cystitis is set up. Such cases are of almost daily occurrence.

The decomposed urine alone, however, produced without

the overdistention or without the abrasion, would not have occasioned a true acute cystitis, but might possibly, by slow gradations, have worked up a subacute cystitis. The rule, if it may be called such, is the one that I have already given—viz., that some abnormity of the urinary organs (as catarrh) almost invariably precedes urinary decomposition.

3. *Inflammation of Adjacent Organs.*—Acute cystitis may arise from the extension of inflammation from neighboring organs, as in vaginitis, metritis, uterine and vaginal cancer, extra-uterine pregnancy, abscesses of the colon or other organs opening into the bladder, pelvic peritonitis, cellulitis, etc. Gonorrhœal inflammation of the urethra may extend to the bladder; but as gonorrhœa of the female urethra is comparatively rare, such an extension is seldom seen. When it does invade the urethra, it is very apt also to extend to the bladder, and is very severe. Inflammation of the renal pelves and ureters may extend to this organ and cause cystitis, the usual course, however, being from the bladder to the ureters and the kidneys.

M. Eugène Monod (Annales de Gynécologie, May, 1880), in discussing the question of cystitis, presents the following conclusions:

(1) The urinary symptoms incident to pregnancy proceed from two different causes, to each of which there corresponds a distinct clinical group of symptoms. The first group receives its explanation from the pressure produced by the gravid uterus, which leads to retention of urine. The second is caused by vesical congestion which results from the predisposition of the bladder to inflammation, owing to its close vascular connection with the uterus.

(2) During the weeks of utero-gestation there may occur a variety of acute cystitis which is unquestionably caused by the development of pregnancy.

(3) Immediately after or during the first weeks following normal delivery there may arise a variety of cystitis which, owing to the time of its appearance, deserves to be called post-puerperal cystitis.

(4) The anatomical relations between uterus and bladder, as well as their vascular interconnections, account for the frequency of vesical disorders accompanying many uterine maladies. Certain physiological changes of the bladder during menstruation and at the time of the menopause also influence the establishment of bladder troubles. Thus there is seen to exist a whole class of vesical inflammations belonging only to women, and, contrary to the generally accepted opinion, cystitis is by no means rare in women.

4. *Constitutional Diseases.*—Certain diseases of the general system affect the bladder, such as the eruptive fevers. In scarlet fever, and measles especially, I have noticed that the mucous membrane of the bladder suffers, to some extent, like the mucous and tegumentary tissues elsewhere. Syphilis is a very potent cause of cystitis, which has not received the attention it deserves. · One of the most marked cases of cystitis that I ever saw was caused by syphilis, and recovered under syphilitic treatment. Diseases of the heart and liver act more as predisposing causes, by producing chronic vesical congestion, than as exciting causes, and when they do produce cystitis it is usually of a low chronic type. Old age, when the *bas fond* is greatly deepened, acts more as a predisposing cause by allowing the collection and decomposition of urine. Paraplegia and other affections of like nature, by permitting overdistention and decomposition, as a rule produce cystitis, but of a low form.

5. *Drugs, Improper Foods, and the Virus of Gonorrhœa.*—Of all drugs, cantharides is undoubtedly the most active in producing true acute cystitis. In many cases it produces simple irritation and hyperæmia, stopping short of actual inflammation. Arsenic and turpentine also produce irritation and active hyperæmia, but seldom if ever go further.

Alcoholic beverages persisted in for a length of time act more as predisposing than as exciting causes. They may, however, induce a low grade of cystitis, or, like the medicines given above, develop an acute process in a vesical membrane already affected. Dr. A. Jacobi has seen aggravated

cases of cystitis caused by the free and long-continued use of large doses of the chlorate of potash.

The various foods can not produce acute cystitis in a healthy bladder, but may aggravate an existing diseased condition. The prohibition, therefore, of stimulating condiments—alcohol, asparagus, and onions—in these diseases will at once suggest itself. I have already spoken of gonorrhœa as a cause of cystitis, and need not dwell on it here.

Treatment.—Chronic cystitis requires local as well as constitutional treatment. In this work, of course, the constitutional or medical treatment alone will be given. The stereotyped practice—rest, opium, and alkalies—in cystitis is far from meeting all requirements. In fact, opium is often injurious; rest, however, is necessary. The constitutional treatment consists, first of all, in so regulating the character of the urine that it shall be unirritating to the diseased organ. Pain and vesical tenesmus should be relieved if possible. The skin should be kept in a healthy and active condition, and the bowels regular and free, in order to prevent all straining at stool and secure unimpeded action of the portal circulation. Free elimination by the skin and bowels will give the kidneys and bladder less to do. To overcome existing constipation, saline laxatives should be used. A glass of purgative mineral water, given an hour before breakfast, answers very well in most cases. Cold-water enemata are advised by good authorities, but they are not often useful.

Winckel recommends the use of saline laxatives, pushed to a point where intestinal hyperæmia is produced and maintained for a time. He believes that the blood in this manner may be to a certain extent diverted from the bladder. I know from experience that the practice is a sound one. A case of my own is of interest as showing the benefit effected, presumably, in this way.

A lady had catarrh of the bladder of some months' standing, which I had been treating in the usual way with only slight benefit. She was one day attacked with cholera morbus accompanied by serious purging and vomiting, the former

almost as severe as that of Asiatic cholera. The effect, for a time, was to almost suspend the action of the kidneys. When she recovered, she was delighted to find that her cystitis had left her.

Among the conditions which produce irritating urine, and hence tend to produce cystitis or to aggravate it if it already exists, are indigestion, malnutrition from any cause, syphilis, and the strumous, gouty, tuberculous, and rheumatic diathesis. When any one of these is present it should be treated for the general relief of the patient and the indirect effect upon the bladder.

The diet of those suffering from this disease must be carefully regulated. The most important of all drinks is pure water. When the urine is not excessively acid, I prefer distilled water, which may be taken freely and with good effect. When an alkali is required, bicarbonate of soda should be added to the distilled water. The latter may be made agreeable by slightly aërating it. Milk will be found to agree excellently in most cases. In the hands of Dr. George Johnson, of England, an exclusive milk diet has cured several cases, some of great severity and long standing.

He says: "The milk may be taken cold or tepid and not more than a pint at a time, lest a large mass of curd, difficult of digestion, forms and collects in the stomach. Some adults will take as much as a gallon in the twenty-four hours. With some persons the milk is found to agree better after it has been boiled, and then taken either cold or tepid. If the milk be rich in cream, and if the cream disagree—causing heartburn, headache, diarrhœa, or the symptoms of dyspepsia—it may be partially removed by skimming. Constipation, which is one of the most frequent and troublesome results of an exclusively milk diet, is to some extent obviated by the cream in the unskimmed milk. When the vesical irritation and catarrh have passed away, solid food may be combined with the milk, and a gradual return made to the ordinary diet."

I have tried this method of treatment in several instances with decided benefit.

I may briefly state that the bill of fare usually given consists largely of fluid foods, as milk, yolk of eggs, soups, and beef essence. Lean meat in small amount once a day, and other solid or semisolid foods that are easily digested and nutritious, may also be allowed. The cause, whatever it may be, should if possible be removed ; and the remedies must be adapted to the stage and condition of the inflammation. In the acute stage aggravated by exposure to cold, diaphoretics should be freely used, and the patient made to rest as quietly as possible. Diuretics should be given if the urine is loaded with solid material, and the alkaline salts are to be preferred. Vichy water or flaxseed tea, with citrate or nitrate of potash, will answer very well at the beginning of the treatment. In using such salines, it serves admirably to give them in an infusion of buchu in case the patient's stomach does not rebel at the taste of it. This of itself is a most valuable remedy in almost all bladder affections. Care must be taken, however, not to push diuretics too far. Sufficient to bring the urine to its normal proportions, and make it slightly alkaline if naturally acid, is all that is required.

In the early stages of acute cystitis, as well as in irritable bladder, Sidney Ringer and other authorities strongly commend the use of minim doses of tincture of cantharides repeated every hour, and even oftener, but I have not seen very good effects from its use in cystitis. To relieve pain, conium is indicated, and it may be given with ordinary doses of camphor. If there is any objection to anodynes given in this way, or if there is sympathetic rectal tenesmus, suppositories of stramonium and belladonna should be used.

While I have said that opium may be given at the onset of acute cases, and to relieve the suffering in old cases that can not be cured, I must insist upon the great harm that may come from the injudicious use of this drug in cystitis. It deranges the digestive organs and the secretions generally, especially that of the kidneys ; and, by changing the quantitative composition of the urine, renders it irritating to the bladder.

In some cases, where frequent urination and tenesmus are very severe, owing to excessive nervous irritability, twenty-grain doses of the bromide of potassium, every four hours until relieved, act very nicely; indeed, this succeeds sometimes where conium fails entirely. Recently I have used hydrobromic acid, and find that it acts even better than the bromide of potassium in certain cases.

Eucalyptus globulus is worthy of a trial in obstinate forms of the disease. From its well-marked beneficial action in albuminuria and other affections of the urinary tract, Dr. W. Anderson was led to try it in cystitis, and he reports it as decidedly useful. Dr. J. J. Mulheron, of Detroit, gives it in doses of twenty minims in subacute cystitis with good results. As this remedy has tonic, antiperiodic, and antiseptic properties, it might be especially suitable in malarious districts.

Benzoic acid is perhaps the drug that would be found most useful in the largest number of cases. It often seems to act like a specific, giving speedy and permanent relief. It may be given in about ten-grain doses, in infusion of buchu, three or four times a day. As the acid is sparingly soluble in cold water, an equal proportion of borax may be added to the mixture. To insure a perfect solution, one may prescribe the benzoate of ammonia, which in the same dose acts admirably and is more palatable.

In the more advanced stages of the disease remedies are used for their direct effect upon the mucous membrane, and much good is obtained in this way. The drugs which have the best reputation in urethritis are employed in cystitis. Balsam of Peru and of copaiba, oil of turpentine, and tar water are the most important of this class, and should be given in capsules in the same way as in gonorrhœa. Oil of sandalwood is also valuable in chronic cases.

When the pain is not severe, and the urine is loaded with mucus and pus, astringents should be given. Tannin continued for a considerable time is of very great value. Decoction of uva ursi, in half-ounce doses, may also be used for this purpose.

Dr. B. A. Segur, of this city, has used salicylate of soda in purulent cystitis, and found that the quantity of pus in the urine rapidly decreased under the use of this remedy. Dr. Sansom, of London, found that the administration of carbolic acid and the sulphocarbolates to animals prevented the decomposition of urine, although he could not detect any of the salt in the secretion. He gave the sulphocarbolates, and afterward collected and preserved the urine, which after six months had not decomposed. This fact should be kept in mind, and turned to account in cases where there is a tendency to decomposition from retention or other causes. An English physician reports, in the Canadian Practitioner, that he has met with no case of offensive urine (intestino-vesical fistula excepted) that ten or twenty grains of boric acid, given every three hours, would not cure.

All these remedies may be tried in cases that are seen early; but when they fail, or when the acute stage of the trouble is long past before advice is sought, then local treatment must be employed, hence such cases should be relegated to the surgeon's care.

CHAPTER XXXVII.

FUNCTIONAL DISEASES OF THE URETHRA.

I KNOW of but one form of affection which properly comes under this head, and that is commonly denominated neuralgia. A case will occasionally be met in which there are pain and tenderness of the urethra, with frequent desire to urinate, and pain in doing so. In short, there is a history of subacute urethritis; but, upon the most careful examination that can be made, with all the means at one's command, there will be failure to find any lesions to account for the symptoms present. To this condition the name neuralgia has been applied—rather improperly, no doubt. From my own observation of this affection, in which there are well-marked symptoms, with no apparent anatomical lesions, I have been led to the conclusion that it is a disease of the nerves of the part—one of the neuroses, as they are called. It is quite possible, however, that progress in the diagnosis of urethral diseases may yet enable diagnosticians to find lesions other than of the nerves to account for the symptoms presented by the disease in question. But for the present it must be classed among the neuroses.

So far as I know, it is an affection peculiar to young women. I have only seen it among young married women of marked nervous temperament, and who have not borne children. In some of the cases observed it was associated with an irritable condition of the introitus vulvæ.

The symptoms are such as occur in a great variety of pathological conditions, and are therefore of little value in guiding to a correct idea of the real trouble; and, as there

are no diagnostic physical signs present, the diagnosis must be made by exclusion. A most thorough examination of the urine is necessary, and the urethra and neighboring organs should be carefully investigated. Perhaps the greatest liability to error lies in mistaking this condition for reflex irritation of the urethra and bladder, arising from ovarian, uterine, or rectal disease. Careful inquiry into the condition of those organs should therefore be made before concluding that the disease is of the urethra itself.

The affection is fortunately rare as well as obscure. I shall therefore relate the history of some cases, which will give the facts as they were observed clinically.

One was that of a lady of a highly nervous temperament, whose parents died of tuberculosis. She was twenty-six years of age, and had been married three years. From the time of her marriage she began to suffer from painful menstruation and uterine leucorrhœa, and she attributed her trouble to getting cold while driving in an open carriage behind a fast horse. She had an anteflexion of the uterus and cervical endometritis, and the right ovary was large, tender, and prolapsed. Before, during, and after her menses she had smarting and burning pain in the urethra, with a feeling of spasmodic contraction, which sometimes rendered urination difficult and painful. In the interval between the menstrual periods she had tenderness of the urethra and discomfort in micturition.

The urethra was repeatedly examined throughout its whole extent with the endoscope, but no disease could be found—only tenderness and spasmodic action.

She derived relief from suppositories of morphine and belladonna, but when last seen still had attacks of the same trouble. It was supposed at first that the urethral trouble was due to the disease of the uterus, but the former persisted after the latter was relieved.

Another case was that of a lady, aged twenty-nine, who had been married for seven years, but had never been pregnant. She was of a highly nervous temperament, but her gen-

eral health had always been good. She began to menstruate at fourteen years of age, and continued to do so regularly but scantily. For several years she had suffered from backache and slight uterine leucorrhœa, and coitus had always been painful. She had frequent and painful urination. The uterus was small—in fact, all the reproductive organs were undersized. There was marked tenderness of the introitus vulvæ. The remains of the hymen were very tender, and at the meatus urinarius and on the vestibule there were a number of quite small papillomata (of the same color as the mucous membrane) that were also exceedingly tender. These were destroyed by an application of equal parts of carbolic acid and tincture of iodine, and the leucorrhœa was arrested by the usual treatment.

This relieved her of all the symptoms except those of the urinary organs. Her urine was examined repeatedly, and was found to be normal. The urethra was also investigated, but nothing wrong was found there except that the papillæ appeared to be unusually prominent. I learned that if she retained the urine for an hour or two the desire to urinate passed off, and did not return until the bladder was fully distended. When she did urinate, the desire to empty the bladder continued—i. e., she had vesical tenesmus—but if she indulged this feeling by passing the urine repeatedly, this tenesmus continued, while if she resisted the desire, it gradually subsided. This proved conclusively that the cause of the frequent urination was the condition of the urethra.

Quite a variety of agents, which I need not give in detail here, were tried in this case. Suffice it to say that she only derived benefit from coating the entire mucous membrane of the urethra with subnitrate of bismuth once a day for a week, and then applying equal parts of tincture of aconite and aqueous extract of opium twice a week for a time. The bismuth was made into an emulsion with water and a little acacia, and applied with the pipette. A steel sound was also passed once a week, and allowed to remain in place for about five minutes. This gave pain at the time, but relief followed. During the

local treatment she took nourishing food, iron, and arsenic. She may be said to have recovered ; but overtaxation, mental or physical, would bring back the trouble in a slight degree for a short time.

I shall briefly treat of some of the more acute diseases of the urethra, which belong to medicine rather than surgery :

Inflammation of the Urethra, or Urethritis.—This is of three varieties : *a*, acute ; *b*, chronic ; and *c*, gonorrhœal.

Acute urethritis, though not a very frequent disease among women, is a very distressing one, and often difficult to relieve. In many cases it will be found to depend upon a specific cause—that is, gonorrhœa. It is often difficult to tell a specific or venereal urethritis from simple inflammation of that portion of mucous membrane without an expert microscopical examination and finding the gonococci. There is a difference in the history when the correct testimony is obtained from the patient. Simple urethritis usually comes on gradually, and is often preceded by symptoms of uterine or vesical disease, while the gonorrhœal variety comes on rather abruptly, and is preceded or attended by acute vaginitis and vulvitis. The chief symptom in both varieties is painful urination. Sharp scalding is produced by the urine passing over the tender surface. There is often a frequent desire to urinate, but not so urgent as in cystitis. In some cases the urine is retained for a long time, evidently from a dread of the pain caused in passing it.

In quite a number of cases I have noticed hæmorrhage. That the blood comes from the urethra is known by the fact that it is not intimately mixed with the urine ; and after micturition it will ooze from the meatus urinarius.

An examination of the parts will show signs of inflammation about the meatus, with or without the same condition of the vulva. Occasionally there is a discharge seen coming from the urethra, but if the parts have been recently bathed this may not be apparent. Introducing the finger into the vagina and pressing upon the urethra from above downward, the discharge can be started, unless the patient has mictu-

rated immediately before. The appearance of the discharge corresponds to that of gonorrhœa in its various stages. An examination of it with the microscope may reveal the presence of the gonococcus, and, if so, that will determine the nature of the urethritis. The absence of that germ is not positive proof that the inflammation is not gonorrhœal, unless frequent and skilled examinations fail to find it.

Cystitis, which is liable to be confounded with urethritis, may be excluded by letting urine flow for a time, collecting the remainder for examination.

The treatment of acute urethritis, whether specific or not, may be conducted on identical principles, using the same constitutional remedies, local baths, etc. This will suffice in most cases of acute disease; but when it assumes the subacute form from the beginning, then the use of injections becomes necessary, hence transferred to the surgeon.

PART III.

THE TRANSITION FROM MIDDLE LIFE TO OLD AGE, AND THE DISEASES OF THAT PERIOD.

CHAPTER XXXVIII.

THE MENOPAUSE.

The menopause is introduced at the beginning of Part III., which is devoted to advanced life and its diseases, because it marks the dividing line between middle life and the beginning of old age.

The permanent suspension of the menstrual function is known by several names, such as critical time, climacteric or climacteria, turn of life, and menopause, the latter term being the most expressive and preferable.

The natural history of the final cessation of menstruation varies so much in different individuals that it is difficult to accurately give a typical account of it. The time when it occurs ranges from forty to fifty years of age, the average in this country being about forty-five. The menopause coming early or late depends apparently upon the delicacy or health and vigor of individuals. There is a popular idea that those who begin early should stop early, but, according to my observations, those who reach the period of puberty betimes because of good health and strength, and who continue healthy, are likely to maintain the menstrual function later in life, providing that all the sexual functions are normally exercised throughout middle life.

The question has been raised as to whether celibates do not reach the menopause earlier than fruitful women, but I

have not yet obtained facts sufficient to answer this definitely. In women of good health, to whom the change comes without complications, I have observed that in one class the menstrual flow becomes less free and shorter in duration, then a period may be missed, to be followed by a recurrence or two, and then it finally ends. In others the intermenstrual period is lengthened to five or six weeks, and the flow when it does come is free, often profuse, and lasts longer than usual. The time from the waning until the final cessation of menstruation varies from six months to two years or longer.

The menopause being an event which is natural to woman, there is nothing in its occurrence which should cause ill health. Still it is attended by certain phenomena indicating special modifications of the organization which disturb the comfort and general activity of the most healthy women, though not to a degree that can be called ill health. Many increase in flesh, become less inclined to mental and physical activity, and show signs of excrementitious plethora. There is usually constipation, often due to deranged secretions, and the nervous and vascular systems are more or less disturbed. Very often functional heart trouble, irregular action and palpitation of the heart, with a feeling of impending danger, are the common symptoms. These are frequently associated with intercostal neuralgia of the left side. Grave apprehensions on the part of the patient are excited by these symptoms.

Similar indications appear in amenorrhœa in young subjects. This points to the fact that cessation of the menses has a peculiar influence upon the innervation of the circulatory system. The flushings of the face, "hot flashes," from vasomotor derangement, annoy them sometimes very much. Fullness of the head and occasionally headache and drowsiness during the day, and disturbed sleep at night, are frequently noticed. In other cases the appetite fails slightly and there is no gain in weight, perhaps a slight loss of flesh. The same disturbed circulation is generally present, but there is, on the other hand, increased nerve excitability. Complaint is made of restlessness, and a number of minor symptoms, such as im-

paired memory from lack of interest and concentration, are observed and often dreaded. These are the usual symptoms which attend the menopause in healthy women living under favorable circumstances.

Comparing the menopause with puberty shows that they are almost exact opposites, the one being a development of structure and establishment of function, the other a decay of structure and suspension of function. One marked difference is noticeable: menstruation is complete and perfect from the beginning. Established after all the structural conditions are matured, it is maintained in full effect. The menopause comes gradually as the decline of the structures progresses.

Atrophy of the sexual organs from impaired nutrition is the anatomical change that directly leads up to the menopause. The ovaries, having all along been breaking down to a certain extent, at each ovulation arrive at a condition of senile atrophy, and no longer exert their full influence in the economy. There is not now the demand for so large a blood supply, and the uterus shares in the lowered nutrition. The ovaries first arrive at the stage of atrophy through a gradual breaking down of the tissues, which causes incompetence. This, no doubt, is the most important factor in the causation of the menopause, but it is only one of several. There is, furthermore, an atrophy or lowered nutrition of the spinal centers and organic nerves, which govern the sexual organs, at this time of life, and the brain also, to some extent, withdraws its influence from them. Simultaneously with these changes the uterus becomes atrophied, the degeneration progressing slowly. There is at first anæmia of the uterus, which is apparent in the pallor of the vaginal and cervical mucous membranes. The whole organ gradually diminishes, until finally it approximates to the infantile in form and size, although the senile uterus is a little larger than that of a child. When these anatomical changes are completed menstruation ends, but the atrophic diminution continues for some time after the menopause.

As already stated, the menopause occurs in consequence

of a decline or atrophy of the sexual organs, nutritive supply and innervation ; hence there should be a harmonious falling off in all the structures concerned in the functions of the sexual organs. When that is the case the change of life is free from anything that requires the attention of the physician ; but when the nutritive changes which precede the suspension of the menstrual function progress faster in one portion of the economy than in another, morbid disturbances arise. It follows that certain affections which occur at the menopause are due to deranged nutrition and premature deterioration of that portion of the cerebro-spinal sympathetic systems which govern the sexual organs. Others are due to premature or delayed atrophic or destructive changes in the sexual organs themselves.

Varying forms of derangements may arise from these causes. For example: Withdrawal of the mental influence may cause suppression of the menses before the sexual organs are atrophied, and an over-devotion to matters sexual may cause menstruation to continue in an imperfect way after the wasting of the uterus and ovaries takes place to some extent. On the other hand, degeneration of the ovaries and uterus may cause suppression of the menses while the cerebro-spinal structures may still be perfect and functionally active. Certain diseases of the sexual organs may keep up a modified form of menstruation after the nutrition of the nervous system has begun to decline. When this latter condition prevails, the nervous and nutritive systems have a drain imposed upon them which they are incapable of sustaining, and consequently suffer derangement. On the contrary, while the nutritive and nervous systems remain healthy and active there is a necessity for menstruation, and if (owing to atrophy or malnutrition of the sexual organs) menstruation is suspended the general economy is sure to be deranged.

The derangements and disorders incident to the menopause may be classified, according to the way in which they are manifested, under three heads: premature or delayed menopause, and constitutional derangements accompanying

or following the menopause. The latter is subdivided into nutritive and nervous disorders consequent upon the suspension or undue continuance of this function.

Premature Menopause.—The function of menstruation may be suddenly suspended, or it may gradually subside and end completely at too early an age. The abrupt ending of menstruation being the most unnatural, gives rise to the greater disturbance of the general health. The causes of premature menopause are of two classes: diseases and injuries of the sexual organs, and diseases of the nutritive and nervous systems. By recalling the conditions necessary to normal menstruation, given in the chapter on Menstruation, it will be seen how these causes are operative. The disorders of the sexual organs which cause a premature menopause are degenerative disease of both ovaries, double ovariotomy, and loss of the uterus or injuries to it, which lead to its premature atrophy. Of the latter, the most conspicuous are hysterectomy, the ovaries being left; puerperal metritis, which results in superinvolution; and extensive lacerations followed by the formation of much scar tissue. Operations for the relief of deep bilateral lacerations requiring removal of large portions of uterine tissue may lead to atrophy. This has been noticed by several observers in late years.

Removal of the ovaries may be taken as the principal cause of abrupt menopause. Ovaries that are slowly destroyed by disease bring about the menopause more gradually. This is made quite apparent from the clinical facts, that those who have well-defined destructive diseases of the ovaries menstruate imperfectly for some time, and suffer very little from the menopause when it is completed by the removal of the ovaries and tubes, because the change comes more like the natural way. Premature menopause caused abruptly by removal of functionally competent ovaries and tubes, removal of the uterus, or diseases and injuries of the uterus, which incapacitate that organ for performing its functions, give rise to such marked derangement of the general health as to demand special consideration. Fortunately, the

ovaries are not sacrificed so often now as in the near past, when they were removed in the vain hope of relieving certain neuroses, incurable dysmenorrhœa, and uterine fibromata.

Symptoms.—The effect of the removal of the normal ovaries in middle life is to derange the nervous, nutritive, and circulatory systems. The clinical history appears in many cases to partake of the characteristics of neurasthenia, nervous irritability, and derangement of the emotions. Great muscular and nerve weakness, indicated by continual weariness, soon appears. In some there is decided nervous irritability (that which is known as nervousness), with a disposition to try to do much, but who become easily fatigued. There is mental depression, indicated by sighing and lamenting over real pains and debility, and imaginary evils that are present or impending. Much of this depression and emotional disturbance comes from a consciousness of being sexually impotent. The nervous systemic disturbance is manifested by headache, pain in the neck and backache, pain in the limbs, tenderness of the skin, strange wandering pains, and queer feelings in the head and elsewhere. These symptoms are the same in kind as those found in connection with the menopause at the right age for it; but in cases of premature arrest of menstruation the disturbances, mental and physical, are greatly exaggerated.

Dr. Savage (Medical Press, November 8, 1893) calls attention to some of the mental troubles complained of by such patients. They fancy, he says, that something has burst in the head or womb; have a sensation as if hot blood were over the brain, and a feeling of deadness or emptiness. With the passing away of the sexual functions, querulousness, jealousy, and a fancy that their husbands no longer care for them, not infrequently occur. All of these symptoms I have frequently observed in my own practice. There are also pelvic tenesmus and pain in the ovarian regions, presumably in the stumps left after the removal of the ovaries.

The next symptoms in the history are derangement of the circulation, chiefly vaso-motor, due to deranged innervation;

irregular heart action; flashes of heat, and cold hands and feet; cold perspiration followed by hot, dry, feverish skin; numbness of the extremities, most frequently of the left arm; creeping, crawling feelings in the skin, and burning spots here and there. Nutrition is generally impaired, and nervous indigestion is present in all cases as a rule. Assimilation is defective, as the loss of flesh and softened state of the muscles indicate. The skin shows malnutrition in being either dry and hot or cold and clammy. These indications are all more marked at the time when the patient should menstruate. These periodical exacerbations are most distinct at the first. As time goes on the patients adapt themselves to the new order of things gradually. If properly managed, recovery may take place in time, but if left without care, they become chronic invalids or insane. Artificial menopause is more often followed by insanity than the normal climacteric.

The effect upon sexual instincts of removal of the ovaries in adolescence has been discussed long and laboriously in the past years, but nothing new has been advanced. Repetition of the two opposite, old, and rather ridiculous ideas—one, that the removal of the ovaries unsexes women, and the other, that it does not affect them at all in this respect—is about all that has been heard on this subject during the last eighteen or twenty years. The fact is, that it does not unsex women, but in time impairs sexual characteristics, and they are, as a rule, finally lost. The passing away of the sexual appetence and the consciousness of being positively sterile often have a most disastrous effect upon the mind, and frequently lead to insanity. I will refer to this again in treating of insanity among women.

Treatment.—The first indication is to quiet the mental disturbance. Much can be done to relieve the patient's depression by giving hope of recovery. Sedatives are required to give sleep, and nerve tonics, such as are suitable in melancholia, are called for; camphor, lupulin, and in some cases small doses of opium, give relief. The opium should be given

with care, and without the patient knowing what she is taking. Lately I have used codeine with better effect than opium gives. The deranged circulation is best managed with a combination of digitalis, strychnine, and belladonna. Occasional attacks of palpitation of the heart—pain in the cardiac region with difficult respiration—are relieved with nitroglycerin, strophanthus, and digitalis. Indigestion is generally of the nervous type, and is controlled by gastric sedatives such as bismuth and oxalate of cerium, or subgallate of bismuth. The spinal symptoms are, I presume, due to a hyperæmic or anabolic state, hence the irritability, nervous twitchings, and neuralgic pains. When these are annoying, relief is obtained by dry cupping, alternating with hot and cold douches, or sprayings, hot and cold, applied in rapid succession to the lumbar regions. Time is the great factor in restoring the equilibrium, and the main object is to relieve and sustain the patient until the new order of things is established.

Enforced Menopause from disease, injury, or removal of the *uterus*, while the ovaries are left, causes a general derangement which may be termed an exaggerated menstrual *molimen*. The nutritive preparations for menstruation go on, and when the eliminative function is not performed there is a temporary plethora. The patient complains of fullness of the head, flushed face, very often headache, and oppression, which is felt as weakness and indisposition to engage in mental or physical exercise. The nervous systemic disturbance is manifested by drowsiness, low-spiritedness, and inability to think clearly and quickly. Those of a nervous temperament are irritable, fretful, and, although sleepy at times during the day, often have sleepless nights.

Treatment.—The old practitioners employed bloodletting, and with decided benefit. In strong women it might be practiced with advantage at the present time, but it should not be continued at each recurring menstrual period, as the habit of requiring bleeding is easily established. Depletion by other means, like saline cathartics, for example, gives much relief, and mercurials are of great value when the liver

and kidneys are inactive. Small repeated doses of mild chloride of mercury, followed by a saline, or natural cathartic waters, act well, and Turkish baths and muscular exercise aid in some cases. The headache often complained of as a painful fullness is best relieved by bromide of soda with antipyrine or monobromide of camphor. Piperazine is the best solvent and gives great relief in the uric-acid saturation which is often present and causes neuralgic, rheumatic, and gouty symptoms. The diet should consist of milk, eggs, vegetables, and fruit, with very little animal food. The quantity of food should be limited; underfeeding rather than full diet should be the rule. Some women have a craving for alcoholic drinks, but these should be prohibited.

The indications for treatment are based upon the fact that the function of the sexual organs is suspended before the nervous and nutritive systems have been prepared for the change in the economy. The nutritive activities are out of proportion to the demand, and therefore the supply should be diminished. If it is not, the nutritive processes become deranged. These derangements should be treated in the usual way.

The disorders of the nervous system arising from enforced menopause from the causes now being considered are also twofold. There is in one class an exalted nerve force, which, no longer finding an outlet through the demands of the sexual system, gives rise to nervous derangements which should be relieved by sedatives, and diversion of the nerve forces in some other direction by mental occupation. Women who have given their best mental energies to the exercise of the sexual system suffer most from premature menopause.

There is another class who suffer from nervous exhaustion or debility. They manifest nervous excitability with loss of power; they are called nervous patients. All such require rest, tonics, and good nourishment. Whenever the nervous system is specially disturbed at the menopause the greatest

care is required to keep its disorders from going from bad to worse. There is a tendency to develop diseases of the nervous system in many forms, and if there is any inherited tendency to insanity it will be brought out under these circumstances.

Delayed Menopause.—The menstrual function is sometimes continued to an advanced age in strong, healthy women, but so long as the function is normal there is no reason for being alarmed. It is only when the menses continue beyond the usual time for the menopause and there is some derangement in that function, or the general health is impaired, that attention should be given to the subject. Efforts should be made to discover the local or general conditions which cause these derangements. When the flow is profuse and irregular in recurrence, there is usually some local cause for it that can be easily discovered.

It may be said in brief that any neoplasm, subinvolution, or old injuries of the uterus may keep up menstruation beyond its normal limit. Scar tissue in the cervix uteri, either from injuries or from the use of caustics, apparently prevents the final atrophy of the uterus by keeping up a continuous irritation. This is the only way that one can account for the relief obtained in such cases by dilating the canal of the cervix. A number of cases of recovery from painful menstruation and delayed menopause have been reported cured by this form of treatment. Uterine fibroids and subinvolution, as well as scar tissue of the uterus, all belong to the domain of surgery, and are only referred to here as belonging to causation.

Delayed menopause is also caused by certain constitutional conditions, such as hepatic, cardiac, and renal disease, and also certain blood states which, if they do not favor a continuation of menstruation long after the time for change of life, certainly cause menorrhagia about the time for the menopause. Menorrhagia and delayed menopause are not infrequent in cases of mitral insufficiency. The effect of this cardiac lesion upon the circulation is to keep up a

continued hyperæmia of the pelvic organs, and this often causes women to go on menstruating when they are old enough to have the menopause and when they can ill afford to keep up that function. The diagnosis is easily made by the physician who makes his examination sufficiently thorough.

The treatment consists in trying to improve the circulation. At the menstrual period the patient should be kept in the recumbent position as long as it can be borne with comfort. She should rest, not necessarily upon her back, but on either side that is most comfortable. Massage and hot-water douches, which I do not hesitate to recommend, if the flow is excessive, will sometimes control this condition. Digitalis and aromatic sulphuric acid in medium doses will frequently give great relief, and they are far better borne than hydrastis canadensis or ergot in those cases of cardiac disease.

Hepatic disease, such as the engorgement and enlargement occurring in chronic malarial poisoning, not rarely causes menorrhagia in young women, and is very apt to delay the menopause. This no doubt is also due to the deranged portal circulation, which keeps up the pelvic engorgement. The treatment, of course, should be such as the physician employs in chronic malaria. It will suffice to add here that, in addition to the use of the alkaloids of cinchona bark and arsenic, I have found the most marked benefit from the use of iodine. I give five drops of the tincture in water, with enough of the iodide of soda to make a clear solution. The formula is: Tincture of iodine, two drachms; iodide of sodium, half a drachm; simple sirup, one ounce; water, two ounces. Dose, one drachm after meals, well diluted. To this I very often add two or three drops of Fowler's solution. Of course, attention to the bowels and general nutrition should be fully given.

The premature menopause has been referred to as arising from certain constitutional affections, notably tuberculosis and so on. Nothing need be said about this here, as sup-

pression of menstruation is a conservative matter and requires no direct attention. It may be well to add also that in case the physician can not find any disturbance of the nutritive or nervous system to account for the delayed menopause, it is evidence that the cause is local, and such patients, of course, should be relegated to the domain of surgery.

CHAPTER XXXIX.

DISEASES OF OLD AGE.

Women are longer-lived than men, and are more tenacious of life, but they are greater sufferers in early and middle life than men. There does not appear to be any difference in favor of either sex in old age, neither is there much variation in the nature of the diseases to which they are subject. Certain general changes of structure and function and a tendency to particular affections occur about equally in old men and women, but there are various modifications of the diseases of old age arising from sex and some disorders peculiar to old women which call for special consideration.

The external appearances of old age are the dry and wrinkled skin, white hair, stooping form, want of teeth, changes in the shape of the maxillary bones which follow the loss of teeth, and the consequent alterations in the lineaments of the face. There is a diminution in height and loss of weight, and functional activity declines as the structures decay. "The pace of age is timid and cautious—the foot leaves the earth slowly and is planted down upon it with hesitation. It is the hasty and determined step of youth that I hear now."* These changes are brought about by a general atrophy of the body. This emaciation varies in degree in different individuals. In some the accumulation of fat continues late in life, but this is exceptional. The emaciation is the consequence of a process which produces atrophy of all the tissues of the body—an atrophy characterized by their

* Blind Alice in The Bride of Lammermoor.

diminution, without change of structure. Evidently tissue waste outruns assimilation and restoration.

There is an exception of great interest in the heart and kidneys, as these organs maintain the dimensions of middle life. In many old people the heart becomes truly hypertrophied. The physiological reason for this preservation of the dimensions of the heart and kidneys during old age is not fully agreed upon by authorities.

I believe that the heart preserves its size or becomes enlarged in advanced life because it has relatively more to do. The blood-vessels degenerate, especially the capillaries, and the heart has additional labor in order to keep up the circulation.

The condition of the heart may be accounted for on these grounds, but there is no satisfactory explanation of the kidneys being an exception to the rule of decay. They may have, however, more to do in advanced life, owing to the fact that digestion is imperfect and the liver and bowels less active. Theoretically, this would explain the preservation of the size of the kidneys, but there are not sufficient facts regarding the function of the kidneys in old age to settle this question.

As age advances there comes, in addition to the loss of tissue, a change in structure produced by degenerative action. The elements undergo a modification in constitution and become the seat of pigmentary, fatty, and calcareous degeneration. The fasciculi of the muscles of animal life are changed by deposits of fatty granulations. This is especially noticed in the muscles of the legs, where it may advance so far as to produce paraplegia more or less complete. The same changes take place in the muscles of organic life. The heart, though slow to give way, does not escape in the long run, as has been often demonstrated in women who die at an advanced age. This degeneration of the cardiac tissue gives rise to asystolism, often manifested in aged persons who appear to be in good health.

The blood-vessels undergo degeneration, especially the cerebral arteries.

The first deviation from the normal state of the tissues appears like a hypertrophy of the inner coats of the vessels. In time this undergoes fatty degeneration. In the first change there is narrowing of the caliber of the vessels; later on they become closed, the circulation is cut off from the tissues dependent upon the arteries involved, and softening or gangrene results. Sometimes the tissue breaks down into the vessels, and small portions being swept along with the blood current into smaller vessels, cause cerebral embolism.

The changes noticed in the structure of the brain are first an apparent predominance of neuroglia over the nerve elements, and then an infiltration of amyloid granulations. According to Bibra, the brain tissue undergoes certain chemical changes. There is a diminution in the fatty material, and an increase in the proportion of water and phosphorus. Alterations in function accompany these changes of structure. The appetite is lessened, but though in exceptional cases it remains unimpaired, and large quantities of food are taken, the digestion is labored and imperfect. The dyspepsia of old people is well known to exist, and is due, in part at least, to diminution of the gastro-intestinal secretions. All the secretions are diminished, that of the skin and kidneys especially so. The function of respiration is modified, owing to the diminished capacity of the lungs. Respirations are increased in frequency, and the quantity of carbonic-acid gas exhaled is diminished. For a long time it was supposed that, as digestion declined in activity, the temperature was lowered, and that belief was apparently confirmed by the fact that the surface temperature is lower in the aged. The internal temperature, however, as taken in the rectum, is about the same.

The essential facts in this matter are, that there is a general atrophic decay of all the tissues and organs of the body, and consequent impairment of function; but, though strange, it is true that the organs of the aged perform their function with an energy that is sometimes the equal of that which obtains in middle life.

Along with these changes of structure and function in the general organization a corresponding decline is observed in the nervous system and mental faculties. All the senses gradually become impaired. First, the eyesight loses in its powers of adjustment, the hearing becomes less acute, although there may be no marked deafness, the sense of touch is less keen, and taste and smell are impaired. The mental faculties undergo certain changes which modify the personal characteristics, and there is a gradual decline in the activity and power of the mind, corresponding in some degree to the noticeable physical changes common to old age. The blunted senses make the perceptive faculties less active and accurate. The memory fails perceptibly, and the mind does not take clear and lasting impressions as in earlier years. The aged remember past events, but forget the things of to-day.

The higher mental powers are the last to give way in those of cultivated minds. The old, like the very young, are emotional, and joy and sorrow come and go quickly. They are less susceptible to profound sorrow from bereavement, and in this they become childlike. The moral principle declines with all the rest, or at least the mind is unable to determine certain ethical distinctions to the extent it formerly was. Body and mind decline gradually, slowly, at about the same pace as they were developed. The processes are alike in many ways, though absolutely opposite in action, the one leading up and the other down. The term "*second childhood*," employed to define old age, is very descriptive of the state from which the mature individual is developed and to which the old return. Prof. William Osler says, "Touch with the slow finger of Time the nutrition of that thin layer, and backward by slow degrees creep the intellectual faculties, back to childish simplicity, back to infantile silliness, back to the oblivion of the womb."

The sexual organs in women undergo complete atrophy, become rudimentary in appearance, and their functions are set at rest for all time. The mental characteristics of sex are modified in the women who grow old gracefully. The love

of children is slow to decline, and the friendly affection remains. In fact, social life is enjoyed keenly by aged women, but the sexual desires gradually fade. The purely sexual characteristics are lost earlier in the life of women than of men. In both sexes the love of active sexual life may continue after the senile impairment has well advanced, but it is most so in those who have been given to overindulgence in middle life. Perverted abnormal sexual excitation in aged women is mostly a derangement of the mental functions. Prurient thoughts and actions are inspired by the memory of the past life rather than by physical events of the present, or the ability to gratify abnormal wishes.

Modifications of Disease in Old Age.—Age exempts from certain diseases, and those that occur at all ages are modified when they happen in advanced life. Though old age predisposes to certain affections, there are various immunities created by it. The eruptive and essential fevers and phthises are rare at the latter period of life. The functional affections of the nervous system, like hysteria and neurasthenia, so common in early life, are seldom seen in the aged. Perhaps the most important modification is in the subjective symptoms of disease being less defined in the aged. Pneumonia, for example, which is common in advanced life, is in many cases far advanced before there is any complaint of suffering made by the patient. This may be accounted for by the feelings being blunted. Vaginitis and displacements of the vagina, rectum, and bladder are often found in old women, who do not manifest as much discomfort therefrom as their younger sisters.

The diseases of old age which are directly related to sex are quite limited, but there are a number of affections that are influenced by sexual characteristics, and I propose to discuss some of the most important of them.

Dyspepsia and *constipation* are in the main alike in both sexes, but there are some peculiarities in women which should be noticed. Indigestion caused by imperfect secretion and gastric catarrh are fully given in works on general practice,

and so also are other intestinal diseases and derangements; but something should be said in this connection about *diarrhœa* and *constipation* in aged women. These opposite conditions are caused by changed or deficient secretion in most cases. In women the constipation is often to a great extent due to atrophy of the muscular coat of the intestines, especially of the rectum. This is manifested by the sacculated state of the latter, often found in aged patients. Hæmorrhoids and prolapsus of the rectum often follow as results of the muscular atrophy; fecal impaction occasionally occurs, and frequently there is much trouble experienced in emptying it when the bowels are free enough. The inability to evacuate the rectum may be caused in several ways. The muscular atrophy incident to old age, and distention from constipation, produce a sacculated condition of the part and loss of muscular power to expel its contents. In other cases the rectum, though weak, is all right, but the sphincter muscle is irritable and resists the feeble efforts of the rectum to overcome its contraction. There is still another condition which causes difficulty of evacuation, and that is sagging of the pelvic floor. In that state, contraction of the rectum and voluntary efforts only push the pelvic floor down, but do not dilate the sphincter.

The sacculated rectum is relieved by daily washing it out with an enema and using an astringent, like tannin or zinc in solution. The tonic contraction of the sphincter is overcome by the use of the dilator or stretching to a limited degree. In the sagging of the pelvic floor the patient or nurse should support the perinæum while efforts are made to have an evacuation. Varicose veins in the pelvic floor and around the lower margin of the rectum often appear, and the vagina also becoming involved, especially the posterior wall, there is prolapse of one or both walls. All these pathological changes occur more certainly in those who have sustained injuries of the pelvic floor in middle life.

Malnutrition of the integument of the pelvic floor, vulva, and anus generally accompanies the changes noticed above,

and is one of the causes of pruritus, that most distressing affection. Sometimes the irritation is due to eczema, in others there is no apparent cause for it. Some degenerative change in the terminal nerve fibers probably produces the troublesome symptom not otherwise accounted for. The mucous membrane undergoes fatty degeneration and leads to ulceration of the hæmorrhoidal tumors and occasionally painful fissures between the hæmorrhoids. These conditions are spoken of by patients as painful and *bleeding piles*.

Causation.—The predisposing cause of these pathological changes in the rectum is the general senile atrophy. Sedentary habits and constipation, so common among aged women, carry the wasting of old age beyond the usual limit and aid in bringing about the various lesions now under consideration. Lacerations of the pelvic floor which have been left unrepaired are also operative in the causation. Such injuries, however, are not by any means the chief cause of these affections of the rectum, nor of prolapsus of the vagina and bladder which frequently occur at the same time of life. All these lesions have been repeatedly found in those who have never sustained any form of injury.

Treatment.—It is far more easy to prevent diseases of the rectum than to cure them, especially if they are far advanced before relief is sought. All injuries of the pelvic floor should be operated upon, even when they have not been discovered until the menopause or soon after. Patients are disposed to decline having surgical treatment at the end of active functional life, claiming that they do not suffer much if any inconvenience, and they fear that they are too old to really need surgical treatment. The unwise physician may take a similar view of the matter. The judicious surgeon will point out to such patients that the treatment proposed is not alone for present relief, but for protection in the future, and for that very good reason surgical treatment should be employed. Constipation should be prevented by laxatives and attention to diet.

It is not an easy matter to find a suitable laxative for

aged women. In old age, as at all periods of life, it is found that the thing that will agree with one will not do for another. As a rule, tonic laxatives are most suitable for the aged, salines rarely so in very old cases. The secretions, if defective, should be stimulated by small but often-repeated doses of rhubarb and belladonna, with nux vomica or cascara elixir. Aloin and belladonna answer well in some cases. The rules to be observed in the use of laxatives is small doses often repeated. This is a good rule for guidance at all times, but it applies with especial force in advanced life.

In case the rectum is atrophied and the sphincter strong, great help will be found in the use of the rectal dilator, as already stated.

Hæmorrhoids should be treated medicinally, in the very aged at least. I have had gratifying results from using the following suppository: Iodoform, sixty grains; balsam of Peru, thirty grains; extract of ergot, twenty grains; and two grains of extract of belladonna, made into twelve suppositories, one to be used at bedtime. In the morning, after the bowels are moved, one or two drachms of the following mixture are instilled into the rectum: Sulphate of zinc, six grains; fluid extract of hydrastis canadensis and water, each an ounce. This course of treatment is of much value in ulceration and fissures of the rectum. I usually begin the treatment of fissures by making an application of cocaine, followed with one part of tincture of iodine and two of carbolic acid. In those who are not very old and feeble the sphincter should be moderately dilated before the application is made.

In a few there is a dermatitis about the anus and much nervous irritation. Borax and water bath, glycerin applications, and cocaine lotion or ointment usually give relief.

Diarrhœa in the Aged Woman.—The pathology of this affection is to some extent different from that found in early and middle life. In the aged there are degeneration of the mucous membrane and irritability; and digestion being less perfect, the contents of the alimentary canal cause disturb-

ance and diarrhœa. Errors in diet and changes of temperature are more certain to cause diarrhœa in the aged than in younger subjects. Fatigue may also bring on relaxation of the bowels. Septic material and depraved secretions may cause diarrhœa in advanced life, but the ordinary bowel troubles of old women are generally due to the causes first named.

In the treatment, sedatives and astringents give the best results in the majority of cases. The antiseptic treatment of intestinal disorders introduced in recent years is seldom applicable in advanced life. Bismuth and tannin with opium usually give relief.

CHAPTER XL.

SENILE ENDOMETRITIS.

THERE is a decided immunity of the uterus from inflammatory disorders in aged women, and that fact has given rise to the prevailing opinion that cancer is the only disease of the uterus to be looked for after the menopause. In the past and at present, authorities have agreed in stating that endometritis ends in recovery at the change of life. These opinions are true only to a certain extent. I have seen a number of cases of endometritis which persisted, in a modified form, after the menopause, and a considerable number in which this trouble appeared long after the climacteric. The pathology and natural history of endometritis in advanced life differ so from inflammatory affections of the uterus in middle life that I concluded eighteen or twenty years ago that senile endometritis was a special disease worthy of more attention than had been given to it. Fritsch, in Billroth's Handbuch für Frauenkrankheiten, treats of this affection, and three or four others have referred to his contributions, and that is all I can find in the literature of it. Even at the present time there are only four or five authors who make any allusion to it.

The subject was first brought to my notice most forcibly in the year 1875. A patient, the relative of a physician, aged sixty-eight, came under my care while suffering from a seropurulent discharge from the uterus. I made a diagnosis of cancer, but found I was mistaken. She recovered, but I could see that this affection differed from endometritis as it occurs in middle life. From that time I have kept such

cases carefully under observation, and collected facts sufficient to complete the natural history of the disease.

Pathology.—The inflammation may be limited to the cervix alone, but as a rule it involves the entire mucosa. When it occurs soon after the menopause, and especially if it is a continuation of a cervical endometritis that existed before the menstrual function was finally suspended, it assumes a modified form. As usually seen, it is suppurative, the discharge being sero-purulent. When it begins as a catarrh it gradually progresses to a suppurative form. In the catarrhal form, the discharge, at first a leucorrhœa, diminishes and changes from a translucent tenacious material to a darker, gluelike one, associated with a sero-purulent matter. The change results from the atrophy of the glands of Naboth which secrete the leucorrhœal discharge of catarrhal endometritis. The character of the discharge is modified first by the atrophy which follows the menopause and by changes of structure which are produced by the disease itself. It is not until the senile involution is complete that the pathological anatomy of the disease is fully developed and shows the characteristics which distinguish this affection from all other forms of endometritis.

There is first a general atrophic thinning of the whole mucous membrane. The epithelium changes from ciliated to cylindrical, then pavement, and finally is almost entirely lost. The surface around the os externum becomes irregular, thin, and shows a bluish-red color, which presents a marked contrast to the appearance of erosion seen in endometritis of early life. Granulations of low vitality appear on the endometrium, and minute extravasations of blood occur and are seen as small pigmentation spots. The glands become obliterated entirely by the morbid process, and hence there can be no secretion, but, instead, pus formation. There is molecular death of the structures, but extensive ulceration is rare.

During the development of this affection the atrophy of the muscular structure of the cervix proceeds faster than in the mucous membrane of the cervix, and there is an inver-

sion of the membrane which gives a peculiar appearance. Around the os externum there is an elevated bluish-red ring which stands out beyond the rest of the cervix. Laceration of the cervix uteri frequently accompanies senile inflammation, and when there is much scar tissue present the suffering is more marked. Stricture, partial or complete, at the os internum or externum is frequently formed. Closure of the os internum is caused in some cases by retroflexion of the uterus. In this condition the discharge is intermittent. For a number of days the flow stops and then a free discharge of offensive pus takes place.

Complete occlusion of the canal is caused by adhesions of the disintegrated mucous membrane, a result which follows suppurative inflammation of the mucosa, but is rarely if ever present in catarrhal forms of inflammation. Pus accumulates above the stricture and distends the body of the uterus, giving rise to a condition which resembles an abscess in pathology and symptoms. If the stricture is not extensive the pressure will force it open, pus will be discharged, and there will be repetitions of the closure, accumulation, reopening, and the discharge. In most cases it is necessary to open and dilate the canal before relief can be obtained. When the disease has existed long enough to destroy the mucous membrane it may end in cicatrization; but there is a marked tendency to continued suppuration. The disease can hardly be called self-limiting.

In nearly all the cases that I have seen in which there had been, for a time, a stenosis of the canal, the uterus had become greatly distended and prolapsed or retroverted. The cavity of the uterus measured three and a half inches in one instance and four inches in another. The senile atrophy may be delayed by the presence of endometritis, and the uterus may remain larger than it should be in old age, but that does not account for, nor is it like, the enlargement from distention. In the enlargement of the cavity from distention with pus the walls become very thin, while in the other the normal thickness of the walls continues.

Causation.—A continuation of endometritis, acquired before the menopause, accounts for a certain number of the cases, especially of those in which the disease is limited to the cervix. Some of the severer forms, in which the disease involves the body of the uterus, are caused by displacements, prolapsus, or retroversion, especially retroversion. Prolapsus in a marked degree exposes the cervix to irritation, and if it continues for long, inflammation and ulceration will appear around the os externum and extend to the mucous membrane of the canal. The atrophy of the cervix is retarded, or else infiltration takes place and keeps the cervix enlarged. These cases are easily controlled if the displacement can be relieved. Corporeal endometritis is frequently induced by retroversion. The displacement interrupts the escape of the secretion of the mucous membrane and its retention causes decomposition and inflammation of a purulent variety. Stricture at the os internum produces inflammation in the same way as retroversion, and the two are often found together, but in the majority of instances the occlusion is the result of the inflammation.

Acute or latent gonorrhœa may cause this form of endometritis, but I am not sure that I have ever seen a case of acute gonorrhœal endometritis after the menopause. Old neglected cases I have seen several times.

Senile vulvitis and vaginitis, due to malnutrition and inattention to cleanliness, extend and produce endometritis in advanced life, but, as the latter very often is the cause of the former, it is difficult to decide in a given case whether the disease began in the uterus or vagina. Fibromata of the uterus act as a very important cause of the affection. Although uterine fibromata frequently disappear after the menopause, the endometritis which accompanies the neoplasm continues, but changes from a catarrhal to a purulent form.

One patient who had a small fibroid passed the climacteric and was free from all uterine disease until she was sixty years old. She then developed an endometritis attended with such a profuse sero-purulent discharge that she sought

relief of her family physician. He made a diagnosis of cancer, and she was brought to me for operation. I found the remains of the fibroid in the cavity of the uterus. It was removed, and, though the serous element of the discharge subsided at once, the endometritis persisted and only yielded to treatment after several months.

I have often wondered why the surgeons, who charge so much against fibromata, such as their danger to life and health, have never found senile endometritis caused by them. Perhaps they have overlooked this matter, or it may be that these are cases which they have mistaken for cancer.

Fibromata cause endometritis after the menopause by delaying senile atrophy and also by sloughing, which takes place in rare cases. Catarrhal endometritis usually accompanies fibromata and changes to the purulent variety after the menopause, as already stated. Another curious fact is that, although the fibroid that causes the metritis may slough and come away, or become pedunculated and the surgeon remove it, the metritis continues. This is the opposite to that which occurs in middle life. If a fibroid is removed in a young subject the endometritis usually subsides when this cause is removed.

I saw one lady, fifty-four years old, who had a submucous fibroid of the uterus. She had a well-marked endometritis, which was being treated without benefit. The fibroid sloughed and was completely removed. She had septicæmia, from which she recovered, but the purulent endometritis persisted, and only yielded to treatment after long-continued efforts. I supposed that the metritis in that case was obstinate owing to its being caused by sepsis, but I found that a like inflammation might be set up with only the presence of a fibroid to account for it.

A patient sixty years old had, judging from her history, a catarrh of the uterus at the menopause. It continued in a changed form, and a short time before I saw her she became worse, had more severe pelvic pains and tenesmus, with a very free sero-purulent discharge. I expected to find an endome-

tritis and prolapsus, but instead found a small, pedunculated fibroid that had been expelled from the body of the uterus and occupied the dilated cervix. I removed it, and the patient was relieved and improved, but the endometritis of the purulent form continued, and, although much less severe, was difficult to cure.

Finally, a form of inflammation the same as senile endometritis occurs when the ovaries are removed in patients having endometritis. After the ovaries are removed the existing endometritis changes to the senile form simultaneously with the atrophic changes which follow the premature menopause. The presence of endometritis is a reason for removal of the uterus in cases requiring double ovariotomy, but those who have most strongly advocated hysterectomy in this connection have not referred to this indication for the operation, so far as I know.

Symptomatology.—The symptom which first attracts attention is a discharge which varies in character according to the extent and stage of the inflammation. When a cervical endometritis is present at the menopause the characteristic leucorrhœa gradually disappears or else changes to that of the senile form of the affection. The tenacious secretion of the cervical glands is replaced by a sero-purulent discharge which is more like a vaginal leucorrhœa. The discharge, sooner or later, causes a subacute or senile vaginitis and vulvitis. There is very often prolapsus of the vaginal walls and uterus complicating the metritis which causes pelvic tenesmus and some disturbance of the vesical and rectal functions.

These are the chief symptoms in the early stage of this disease when prolapsus is the only complication. When the uterus is retroverted and, owing to imperfect drainage, the products of inflammation accumulate and distend it, there is more pain and the constitutional disturbance is much more defined. There is often a rise of temperature and the pulse increases. The digestion is also deranged, and ultimate nutrition impaired in cases of long standing. This is due to pain, reflex disturbance, and more especially, perhaps, to a

slight chronic sepsis. The malnutrition increases the appearance of premature old age, and the dry, bronzed appearance of the skin is suggestive of malignant disease. In cases where true stenosis takes place at the os internum or at any point in the canal of the cervix the symptoms are usually very pronounced. The pain is acute and compels the patient to rest in bed. It differs from that of acute pelvic inflammation in being slight at first but gradually increasing, while the pain of acute disease is violent at first and gradually subsides. The constitutional disturbance is more marked in this condition or complication than in any other. There is symptomatic fever. In one of my patients the temperature reached 102° F. I have already stated that stenosis may be the cause or consequence of the metritis. The imprisoned secretion and broken-down tissue produce the inflammation, or the stenosis may be produced by the inflammation. That accounts for the fact that in some cases the distention of the uterus and the symptoms are gradually developed, but in others they come on somewhat more abruptly.

Physical Signs.—Inspection shows, in nearly all cases, patches of inflammatory redness about the vulva which is peculiar to senile vulvitis; the contrast between the red portions and the anæmic appearance of the membrane generally is well defined. With the aid of the speculum the signs of the same form of vaginitis are observed. Of course, the vagina and vulva are not involved in all instances, but as a rule they are. In quite a few it has been limited to the upper part of the vagina, and mostly to the vaginal portion of the cervical membrane.

The character of the discharge, which is of much value as a sign, is best studied through the speculum. Indeed, upon this evidence, senile endometritis is distinguished from other troubles and forms of inflammation, such as cancer and gonorrhœa. The appearance of the discharge differs from uterine leucorrhœa in being less tenacious, owing to the absence, in varying degrees, of the secretion of the glands of the cervix. The color also indicates the composition to be

sero-purulent, and in this it is more like the outflow in specific inflammation and is similar in appearance to that found in the early stage of cancer.

The differentiation between the discharge in senile endometritis, specific metritis, and cancer must be made by the microscope if one would make the distinction at once—i. e., without waiting for the full development of the history. In senile metritis, pus, serum, disintegrated tissue, and changed or broken-down epithelium and bacteria are found. In cancer the exuded matter is sero-sanguinolent, and later in the progress of the disease contains broken-down necrotic tissue and elements of the neoplasm. The gonorrhœal exudation can be distinguished by the specific germ of that affection. Without the aid of the microscope it is impossible to make a positive diagnosis between the specific and non-specific origin of senile endometritis, but, fortunately, the indications for treatment are the same, whatever the cause of the malady may be. The history may show that gonorrhœa is the probable cause, especially if the disease comes on abruptly, was acute at the start, and involved the vulva and urethra first.

The differentiation between this affection and cancer of the cervix is made by observing that in cervical endometritis there is the characteristic discharge, degeneration and atrophy of the mucous membrane, and in cancer there is, in addition to the discharge, infiltration of the tissues—i. e., neoplastic growth. When the disorder is fully developed in the body of the uterus the clinical history resembles that of a malignant disease, but can be readily diagnosticated by the fact that pus in quantity accumulates in the cavity of the body of the uterus in metritis, while that never occurs to the same extent in cancer. By aspirating the uterine cavity the material drawn off will be pus and perhaps a little blood, while in cancer it is serum, blood, and broken-down cancer tissue. The aspiration is easily made by using a small curved pipette with a rubber bulb at the end. By compressing the bulb and introducing the pipette and removing the pressure, enough material can be withdrawn to show its character and

decide the diagnosis. Of course, if a microscopical examination can be obtained by an expert, the diagnosis can be made with greater certainty.

The history of the progress of the disease aids in the diagnosis. Cancer progresses steadily, but metritis continues about the same, or slowly yields to such treatment as will have no effect in retarding or curing cancer. Adenoma may be mistaken for senile endometritis, but the differential diagnosis is easily made. Adenoma uteri occurs earlier in life, generally about the menopause, and is attended with menorrhagia or metrorrhagia as the most marked symptom. This difference is diagnostic because menorrhagia does not occur in this form of metritis. There is not, as a rule, any purulent discharge in adenoma. By using a small curette a portion of the adenomatous growth can be removed for examination which will complete the diagnosis.

Treatment.—All useful means should be employed to restore the general health by tonics and good diet. Surgical treatment is the most important, and I am constrained to give it here, because the disease is not treated of in works on surgical gynecology. When the disease is confined to the cervix a douche of a solution of borax, three drachms to the quart, gives much relief and prevents the discharge from keeping up vaginitis. Sulphate of zinc, one drachm to the quart of water, is very effective in case the borax fails. The hot-water douche, as used in uterine disease generally, is not of much value in the senile form. If there is any prolapsus or other displacement it must be corrected by the use of medicated tampons until the inflammation is relieved. Sterilized absorbent cotton covered with boroglyceride, glycerin, and tannin, or white vaseline, answers the purpose. I have tried prepared wool for tampons, but it is more irritating and has to be changed more frequently. Astringent and alterative applications are useful in relieving the cervical inflammation, but any caustics, even the mildest, do harm rather than good if repeatedly used. I have most faithfully tried carbolic acid and iodine, which are so effective in ordinary metritis, but

these agents are not satisfactory in the senile form of the disease. One or two applications of a combination of carbolic acid and tincture of iodine may do good, but it should not be repeated many times. All caustics rather encourage the breaking down of the atrophied tissue, and when the slough separates, the surface left does not incline to heal, but to suppurate. The best results have been obtained from the use of boroglyceride with tannin, glycerin and tannin, fluid extract of hydrastis canadensis, and a mild solution of acetic acid, one drachm to two ounces. The canal should be thoroughly washed out with clean water and the application made with a pipette.

I generally begin the local treatment with dilute acetic acid or tincture of iodine four parts and carbolic acid one part; an application of either of the above twice in the first week. This answers the best when the discharge is very free. Following this, a mixture of twenty grains of tannic acid in an ounce of boroglyceride should be used, but as this is a thickish material difficult to apply, I manage by warming the mixture and using a pipette with an opening in the end as large as the size of the glass tube will admit. Tannin and glycerin were used almost entirely some years ago; now I prefer the boroglyceride and tannin. The fluid extract of hydrastis canadensis is easily used and has a very good effect, and I fall back on that when the others fail to do well. Iodoform is the most efficient, and when it can be freely and properly applied supersedes all other agents. Indeed, were it not for its being difficult of application to the canal of the uterus, it would meet all requirements. I have only used other remedies, such as I have mentioned, because they were so much more easily applied and have not the offensive odor of iodoform.

I was first led to use iodoform in senile endometritis by observing its remarkable effects in the treatment of ulcers in general surgery. Dr. Fordyce Barker employed it in cases of cancer of the uterus with great benefit. He used iodoform suppositories made in convenient form to introduce into the

uterus. The results which he obtained were so favorable that I am now inclined to believe that some of the cases he believed to be cancers were really cases of senile endometritis. Many gynecologists have made that mistake in diagnosis, and it is no disparagement to suppose that Dr. Barker may have occasionally fallen into the same error. I presumed that the effect of iodoform was due in a measure to its antiseptic qualities, but learned that it was not a germicide to any degree sufficient to explain its effect in checking suppurative inflammation. The Bulletin Générale de Thérapeutique contains a full discussion of the subject :

"Maurel, who is well known by his researches on the leucocytes, has undertaken to solve the problem why iodoform, which is so efficacious in preventing or suppressing suppuration, should apparently have so little action on the pyogenic staphylococci.

"He first experimented with a virulent culture (on *gélose*) of staphylococci in the presence of leucocytes. The latter speedily absorbed the staphylococci but succumbed in less than two hours. In the control field, however, they accomplish their evolution and live from twelve to twenty-four hours. Maurel finds that the death of the leucocytes under the influence of the pus micro-organisms is due to a toxine contained in the bodies of these microbes ; not to the mechanical action of the staphylococcus or to the products which the latter yields up to its environment. Under the influence of these same staphylococci the red corpuscles become diffluent in fifteen hours and then disappear.

"Another series of experiments were made by subjecting the figured elements of the blood to the action of iodoform in the dosage of 10 to 2·50 per kilogramme of blood. Neither the smaller nor the larger doses were found to be toxic to the leucocytes ; the vital activity of these latter was, on the contrary, augmented, and the action on the red globules was *nil.*

"A third series of experiments show iodoform to be without marked action on cultures of the *Staphylococcus au-*

reus and *albus*. In a fourth series of researches Maurel subjected both the leucocytes of human blood and cultures of the staphylococcus to the action of iodoform in varying proportions and under varying conditions. His conclusions are as follows:

"1. Iodoform attenuates the virulence of the staphylococcus. While in the virulent state, this micrococcus kills our leucocytes in less than two hours; when it is subjected along with the leucocytes to the influence of iodoform, the latter preserve their movements for eight hours, at least, and even complete their evolution.

"2. The staphylococci which have thus lost a great part of their virulence (and to such a degree that they are seemingly devoured by the leucocytes with impunity) keep all their reproductive energy unimpaired, so that virulence and the power of reproduction are independent properties.

"A final conclusion is deduced that it is in both these ways —according to Maurel it is by augmenting the energy of the leucocytes and attenuating the virulence of the pus microbes— that iodoform opposes suppuration, which is, in the language of bacteriology, a massive slaughtering of the leucocytes."

These teachings are in harmony with clinical experience as to the benefits of iodoform in preventing or arresting suppuration.

There is considerable difficulty in applying iodoform to the cavity of the body of the uterus in sufficient quantity to be effective. Suppositories made with cacao butter are not retained in the cervix, and while they remain in the cavity of the body for a time, there is not enough retained to give the full effect. I have used a solution in boiled linseed oil, and also an ether solution, but the latter causes much irritation and the former does not hold enough of the iodoform. The best is the dry fine powder which can be introduced through a small cannula. The next best (and more easily introduced) is the fine powder held in suspension in acacia and water by agitation and then instilled with a pipette.

When the disease (limited to the cervix) is complicated

with scar tissue resulting from old lacerations, I have operated with the result of relieving some of the neuralgic pain and with benefit to the inflammation. It is difficult to get good and prompt union. In fact, some of the operations have been failures.

The treatment of the corporeal form of this affection is rendered more difficult by certain complications, such as prolapsus, stenosis of the canal, or retroflexion. Complete closure of the canal of course must be relieved first by dilatation to afford room for washing out the uterus and subsequent drainage. When the stricture is at the os internum, time and patience are necessary to open the canal. This, if possible, should be accomplished by dilating the canal below the stricture and then pushing a very fine probe through the stricture. There is danger in puncturing it with a knife, because it is difficult to determine the direction of the canal, and hence danger of puncturing the wall of the uterus. Gradual dilatation is best. Owing to the friable condition of the uterine tissue, laceration is sure to occur if forcible dilatation is practiced. When an opening has been made large enough to pass a uterine sound, a piece of gauze should be introduced to keep the parts from contracting. Better still is a tent of elm bark, carbolized before use. This tent is bland, sterile, and swells a little, which keeps up dilatation. When the cervix is dilatable, the canal should be made large enough to admit a reflux catheter. The uterus should be washed out with a five-per-cent solution of carbolic acid and then packed with iodoform gauze. The packing should be left in forty-eight hours if there is no severe pain and rise of temperature. Upon removing the gauze the uterus should be washed out with boiled water and iodoform powder introduced, in the way described in the treatment of cervical endometritis. Owing to the difficulty of handling iodoform, I have used peroxide of hydrogen and found it very useful. When a reliable preparation can be obtained it gives most satisfactory results, providing it is used twice or three times a day.

From the difficulty of obtaining reliable preparations of peroxide of hydrogen and the fact that it is easily decomposed by heat and exposure, I have lately used a preparation called pyrozone made by McKesson & Robbins. It is an aqueous solution of dioxide of hydrogen. A three-per-cent solution is the one I have used, but I have not had sufficient experience so far to enable me to say that this pyrozone is all it is claimed to be.

In cases complicated with retroversion the malposition must be corrected in order to be able to wash out the uterus thoroughly and to keep up drainage. The treatment of retroversion is very difficult when the vagina is contracted, as it usually is after the climacteric. In fact, it is impossible to replace the thin-walled uterus that is distended with the products of inflammation. Thorough dilatation and evacuation must first be made, and then by the use of a tampon or a soft ring pessary the posterior vaginal wall may be carried backward far enough to keep the fundus uteri from falling downward below the level of the cervix. Free drainage may be obtained, although the uterus may still be retroverted in a slight degree. Prolapsus also requires to be corrected.

Both patient and surgeon are likely to become discouraged with the treatment, which is sure to be tedious, especially if not well understood. This has raised the question in my mind whether hysterectomy would not be justifiable in the worst cases. I have seen the uterus removed, supposedly for cancer, but really in senile endometritis, and the results have been good. Still, I would prefer to employ the treatment recommended here, and not until that had failed would I resort to hysterectomy.

In cases of senile endometritis complicated with complete prolapsus, vaginal hysterectomy is the proper treatment in all cases excepting in those whose general health presents a contra-indication. Dr. Edebohls has done hysterectomy in cases of complete prolapsus, and, although I have succeeded in relieving such displacement in the majority of cases without removing the uterus, I resort to hysterectomy without

the least hesitation, and with confidence in the results, in cases of senile endometritis and complete prolapsus.

Senile Vulvitis and Vaginitis.—An ill-defined form of inflammation of the vulva and vagina occurs not infrequently in aged women. These affections have already been referred to in connection with senile endometritis, and they also occur independently, and therefore demand a brief notice.

Inflammation of the vulva and vagina of the senile form appears after the menopause, of course, but it may be a continuation of an inflammation that existed before the menopause, which simply changes its character after the cessation of the menses. As a rule, the inflammation is of a mild type and is generally follicular. The discharge is sero-purulent and not very profuse. The mucous membrane is a bluish red in patches, the intervening portion being smooth, glazed, and pale, compared with the inflamed places. In severe forms of the trouble there is a general redness, the congestion appearing to be superficial. In all cases there is evidence of the senile atrophy which has taken place. The nutrition of the tissues is defective, especially in the very aged.

The symptoms are a discharge, a sensation of burning in the head, smarting after urinating, and in many cases pruritus, but the subjective part of the clinical history is not well defined in all instances. Many patients suffer but little, but this is owing to the diminished sensitiveness which comes with age. In some of the most marked cases the patients complain only of the discharge and occasional irritation. Inspection reveals the appearances given above. The diagnosis is made by excluding malignant disease.

Causation.—Though the impaired nutrition which comes with advanced age predisposes to the senile form of inflammation, want of cleanliness appears to be the most common direct cause. Neglect to keep the parts clean and dry is very common among aged women. The secretions of the vulvo-vaginal glands when permitted to remain and decompose upon the tissues are quite irritating and light up inflammation. In some cases vulvitis and vaginitis are secondary

to urethritis or senile metritis. This has been referred to in speaking of metritis, but vulvitis and vaginitis, secondary to urethritis, have had less attention. I have noticed that the discharge from the urethra and urethral glands will prolong inflammation of the vulva indefinitely.

Treatment.—Care should be taken to determine the cause and complications if any are present. If there is metritis, which may have caused the vaginitis, or a urethritis that is keeping up the vulvitis, these should have first attention. The treatment is the same as in these affections in younger subjects. Thorough cleansing of the parts two or three times a day is the first essential, and then the use of medicinal agents. Stimulating astringents answer better than caustics even of the mildest character.

The parts should be thoroughly cleansed with borax and water three times a day, and each time followed with an application of a solution of tannin with very little glycerin. Ten grains of tannin, seven drachms of water, and one drachm of glycerin answer well. Equal parts of the aqueous fluid extract of hydrastis canadensis and water are useful. When these do not act promptly I make applications of balsam of Peru or tincture of benzoin. In obstinate cases I have derived benefit from the ammonio-citrate of bismuth solution.

This is about all the difference between the senile form of vulvitis and vaginitis and that which occurs in early life, both as regards pathology and treatment.

CHAPTER XLI.

PROLAPSUS OF THE ABDOMINAL VISCERA AND PELVIC ORGANS.

Prolapsus of the Intestines and Omentum.—The downward displacement of the abdominal viscera differs from the pendulous abdomen due to a relaxed state of the abdominal muscles, which are generally in fair condition in prolapsus. In many instances I have found the abdomen rather flat in cases where the displacement was most advanced.

The pathology is an elongation of the mesentery and omentum. As a rule, both the bowels and omentum are prolapsed, but occasionally the intestines alone are found out of place. The anatomical change takes place slowly, I presume, as the lesions are found only in either aged or feeble women. The effects upon the intestines are first passive hyperæmia, and later impaired or deranged secretion and loss of muscular toncity and consequent derangement of function.

The symptoms are, a sense of dragging in the abdomen and a feeling of weakness or want of support in the gastric region. American women sometimes call it a "gone feeling," indicating the location of the distress by placing the hand upon the epigastrium. These symptoms are all increased by walking and standing, and relieved wholly or partially by the recumbent position. Irregular intestinal pains are generally present, with congestion or diarrhœa. In some the diarrhœa and constipation alternate.

Physical Signs.—Palpation of the abdomen shows the absence of the small intestines in the upper part of the abdomen. The wall of the abdomen rests upon the aorta,

and the pulsation is so distinct that it suggests aneurism. Owing to this contact of the wall of the abdomen with the large artery, the patient is conscious of the pulsation and often complains of it as annoying, especially when resting upon the back. Bimanual examination of the pelvis detects the presence of the intestines and omentum in the sac of Douglas. The intestine can usually be distinguished by the lightness and extreme elasticity due to the presence of gas, which gives signs to the touch unlike anything else. When the intestine contains fecal matter, and in case the omentum is prolapsed, it is not always easy to make out the true condition.

I have succeeded in making a diagnosis, in cases where there was doubt at first, by the simple expedient of placing the patient in the extreme Trendelenburg position, or the knee-chest position, and then the intestines and omentum will return to their proper place, which proves conclusively the nature of the object felt in the pelvis. When complicated with retroversion of the uterus, the diagnosis is a little more difficult. The uterus occupies the most dependent portion of the pelvis and drags the bladder backward. The prolapsed intestines rest upon and above the uterus and bladder and can be felt with the hand upon the suprapubic region only. By vaginal touch the displaced abdominal viscera can not be reached, excepting on either side of the uterus, and then not distinctly. Placing the uterus in position and keeping it there permits the abdominal viscera to descend into the sac of Douglas and remain there; then the diagnosis is made without doubt or trouble.

Causation.—Improper use of corsets and the position of bending over in reading and writing, or in using a sewing machine, predispose to this displacement, and actually produce it for the time being. The viscera, which has been temporarily crowded out of place, will become replaced upon resuming a normal attitude and removing the tight clothing. There is, however, a limit to this recovery of position by the viscera, and that is reached in advanced life, when the tissues begin to undergo the senile atrophic change and the prolapsus

becomes continuous. Diseases of the liver are likely to aid in causing this disorder through impaired nutrition of the abdominal viscera. Dilatation of the stomach, I think, would be likely to crowd the bowels down out of place; but, although I have found both of these affections conjoined, I have not concluded that the one acted as the cause of the other.

Treatment.—The indications are to replace the viscera. This is accomplished by putting the patient in the Trendelenburg position and flexing the thighs; then by manipulation through the abdominal wall the omentum and bowels can be raised into place. In some of the worst cases it is necessary to replace by bimanual manipulation. With two fingers in the vagina the intestines can be pushed up out of the pelvis, and with the left hand upon the abdomen they can be carried into the abdominal cavity. Once out of the pelvis, if the wall of the abdomen is relaxed, they can be held in place for a time with a proper abdominal support, which should be applied while the patient is still in the position, with the trunk inclined toward the head. The best support that I have found is a flannel bandage, with two perineal straps to keep it from slipping up. Under the bandage and above the pubes should be placed a pad of absorbent cotton. The bandage should be tightly pinned with safety pins, introduced parallel to the median line of the body, and close together. Rest in bed is necessary for a time at the beginning of the treatment.

When improvement is noted, the patient should be permitted to sit up, after adjustment of the bandage, for a time each day. The clothing about the waist should be perfectly free. The knee-chest position should be practiced several times each day, and a few short rests taken in the reclining position. The bowels should be kept free. Replacement, support, and postural treatment, together with massage, tonics, faradization, and general tonic and restorative management, give relief in the majority of cases. Complete relief may be obtained in the case of young women, but in that of the aged recovery is seldom if ever attained.

Senile Prolapsus of the Pelvic Organs.—In aged women prolapsus of the vaginal walls, bladder, and uterus occurs quite frequently. Descent of the pelvic organs differs in causation, pathology, and treatment from such affections when they occur in middle life. Prolapsus at this period comes from atrophy of the muscular tissue of the vagina and pelvic floor, and is not relieved by surgical treatment, as in middle age; hence the discussion of the subject is appropriate in this work.

Two classes of cases have come under my observation: First, those who have borne children and have sustained some slight injuries of the pelvic floor, and imperfect involution of the uterine ligaments. These lesions following child-bearing are not sufficient to cause prolapsus until atrophy takes place after the menopause. This class of cases occupies an intermediate position between the displacements of middle life and those of the more aged patients.

The second class comprises those who have had children and pass the menopause without trouble. but develop displacements in advanced life, and those who have not had children, and have not been subjected to the usual causes of prolapsus of the pelvic organs. In fact, I have seen this affection in aged maidens who had never had any disease of the sexual organs. One, I remember, was over seventy years of age, and the hymen, although greatly stretched, was still intact.

Symptomatology.—In the majority of cases the patient first notices a dragging-down feeling in the pelvis on standing or walking. The bladder is often irritable, and hence there is frequent urination. Rectal tenesmus is sometimes present and is annoying, especially in those who have rectal hæmorrhoids. As the trouble progresses the vaginal walls begin to protrude from the vulva. This protrusion gradually increases and becomes troublesome when exercise is taken. In some there is irritation of the vaginal mucous membrane, which leads to a subacute form of vaginitis. The bladder and rectum suffer more. Urination, at first frequent, be-

comes difficult, and in advanced cases the bladder is never fully emptied. The retention of a certain quantity of urine causes decomposition and eventually cystitis. There is in some cases partial incontinence; in others defecation is difficult. All these symptoms being aggravated by exercise, the patient naturally keeps quiet, if possible, and that favors malnutrition and more complete atrophy.

Physical Signs.—Inspection shows a relaxed state of the pelvic floor, which sags down below its normal elevation. The vaginal walls protrude more or less according to the degree of displacement. Digital examination shows the vaginal walls to be atrophied; they are thin and lacking in muscular tissue. The uterus is small and there is no invagination of the cervix excepting in cases of laceration and hyperplasia, when the cervix may be large for a senile uterus. In other cases there is no portion of the cervix found in the vagina, but in place of the cervix there is a contracted condition of the upper part of that canal, owing to scar tissue. There is a puckered condition of the vagina, which forms a *cul-de-sac* below the cervix uteri. The cellular tissue in the pelvis is absent as a rule, which gives an impression on touch examination that the pelvis is empty, in consequence of the extraordinary atrophy of the muscular and areolar tissue.

Causation.—Sedentary habits and impaired nutrition are the chief predisposing causes of this exaggeration of the atrophy which occurs in old age. Maintaining the sitting posture for a great part of the time, a common habit among many aged women, is very effective in causing the affection. Constipation and delay in emptying the bladder aid in the causation. Those of active habits, who from necessity have to be upon their feet all day, are often affected. In hospital practice I have found senile prolapsus among the very poor, hard-working women of all nations.

Treatment.—When prolapsus has been well established it can not be cured. Especially is this the case if the patients are well advanced in years. I have seen a large number operated upon, and, although a little temporary relief was

afforded, the trouble returned in time. It is far more easy to prevent prolapsus in the aged than to manage it when fully established. Much relief can be given and the patient made comfortable by treatment. When the first symptoms appear, astringent douches should be used. A solution of sulphate of zinc or tannic acid will do best. This and rest after short periods of exercise often give complete relief. It is seldom, however, that one sees such cases until they are well advanced; then, in addition to the douche, tampons are necessary—a small tampon of absorbent cotton, medicated with tannin and glycerin, boroglyceride, or five per cent of ichthyol in glycerine.

During this treatment the patient should wear a perineal pad and strap while exercising. When the prolapsus yields to the tampon and douching, so that a small tampon is sufficient, a pessary should be tried. I have found Peaslee's ring very efficient. A small size should be used—one that fits loosely, as the delicate vaginal walls will not bear pressure. The perineal band ought to be used for a time after the pessary is introduced, because there is danger of its coming away. The douche should be continued, and the patient directed to push the pessary up after exercise as long as it inclines to come down. Such cases must be kept under observation after they are relieved, because the soft-rubber pessary requires to be changed and cleaned every month or two.

If the prolapsus is accompanied with senile endometritis, cystitis, or prolapsus of the abdominal viscera, these troubles should be treated at the same time. Constipation and general debility are generally present and must have due attention.

I deem it necessary to add that I have known this treatment by mechanical support to fail and in some cases do much harm, owing to the fact that the tampons employed were too large, and by failing to use douches when the tampon was changed. Pessaries also do harm if the size used is too large or the rim of the ring too small.

CHAPTER XLII.

VARICOSE VEINS OF THE PELVIS.

THE pelvic veins are especially predisposed to overdistention, for the reason that they are without valves, are not supported by muscles, fascia, and integument, as in the extremities, and are under constant pressure while the woman is in the erect position. While a student of medicine I witnessed a demonstration of the anatomy of the pelvic floor, by Prof. Corydon L. Ford, in a subject in which the pelvic veins were distended to a degree that was quite abnormal. Attention was especially called to this condition, and suggestions made regarding the trouble to which it might give rise. Since then I have kept the matter in mind while engaged in practice, and am well satisfied that this varicose state of the veins is not uncommon and is the cause of much suffering.

There is little in the literature of medicine upon the subject, excepting that Winckel in his work on gynecology refers to this condition of the pelvic veins in relation to uterine diseases.

Dr. Dwight mentions having found it in one of his subjects which he had dissected. Barnes, Klob, and Brandt have found phleboliths in the pelvis, and suggested that their occurrence in this location was probably due to the absence of valves in these veins.

A most valuable article on this subject (the only thing of practical importance that I have found) was issued by my friend Dr. A. Palmer Dudley, of New York, in 1888. He names it varicocele in the female, and discusses the subject

with special reference to its surgical treatment. I have been able to verify all that Dr. Dudley has said, and now propose to consider the subject from that standpoint, without dwelling upon the anatomy of the vessels further than to recall the fact that the pampiniform plexus is located upon the posterior surface of the broad ligaments, and that it is in this plexus that the lesions are most frequently found. In some of the worst cases, however, the varicose condition involves all the pelvic veins. This I have pointed out in my work on injuries of the pelvic floor, in which I show that the so-called rectocele is very often a mass of varicose veins. The fact remains that this plexus is most frequently the part involved. Both sides are affected, but occasionally it is unilateral, and generally on the left side. It occurs most frequently in middle life. I have never seen it in any one under twenty-five or over sixty years of age, but it possibly may occur later in life than I have ever found it.

The first effect of this distention of the veins is to cause pressure upon the pelvic tissues and nerves, giving rise to dull pain and pelvic tenesmus. The continued derangement of the circulation, in time, develops disease of the pelvic organs generally. First, perhaps, the ovaries suffer; next the rectum; and finally the uterus and bladder.

In many cases diseases of the pelvic organs generally may precede or take place simultaneously with the varicosity of the veins; but, no matter whether the one or the other takes precedence, the lesions of the veins aggravate the other affections. Dr. Dudley, in his article referred to above, gives a very clear illustration of this point. Here is what he says in speaking of his third case treated by operation:

"This was the third case in which I had made a diagnosis of varicocele in the broad ligament, and performed laparotomy for its removal. It was the most obscure of the three, the varix being the smallest, and on that account I determined to have a careful microscopical examination of the specimen made, to either confirm or invalidate my diagnosis. I gave the specimen for examination to Prof. Porter, of the

Post-Graduate School, who had sections of it mounted and drawings made from them for me. The following is his report in full :

" ' *Pampinocele.*—Upon microscopical examination of the ovaries, tubes, and broad ligaments removed by Dr. Dudley, the following conditions were found : First, the ovaries were slightly enlarged and the seat of a few small cysts, some of which were filled with a clear serum and others with a semi-gelatinous substance. The stroma of the ovary was composed of ordinary white fibrillated connective-tissue sub-

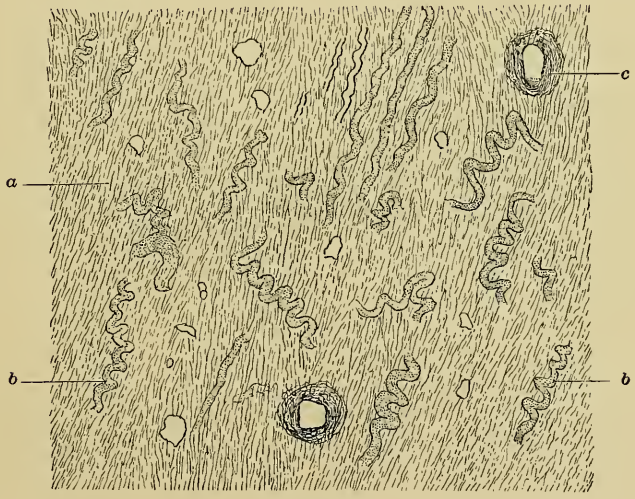

Fig. 22.

stance (Fig. 22, *a*), smooth muscular fibers, and blood-vessels. The walls of the arterioles and small arteries in the stroma were generally thickened (Fig. 22, *b*) ; in some the lumen was diminished, while in others it was expanded. This condition would naturally disturb the nutritive supply to the gland, and tend to produce a capillary engorgement.

" 'Second, the Fallopian tube presented no special abnormity.

" 'Third, the most marked pathological changes were found in the substance of the broad ligament ; the pampini-

form plexus was in a state of marked congestion, the walls of the vessels were thickened, and their course was unusually tortuous. That this engorgement was of long duration is sustained by the condition of the capillaries, which were found,

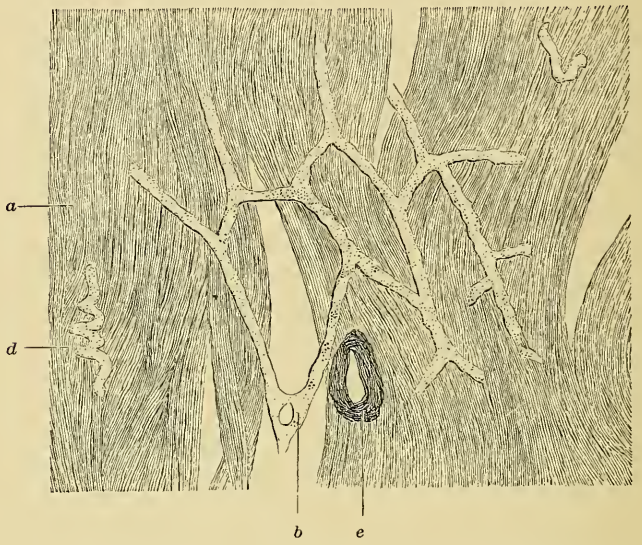

Fig. 23.

upon microscopical examination, to be enormously distended and filled with blood in a state of partial pigmentary degeneration (Fig. 23, *b*), indicating considerable duration of the stasis. Under ordinary circumstances the capillaries collapse and can not be distinguished from the fibrillated connective tissue in which they are imbedded unless an artificial injection is made, or they are distended with blood as the result of an acute or chronic congestion. Had the congestion been acute in character the capillaries would have been distended with red and white corpuscles, which could be readily recognized as such. But in this case it was difficult to make out the corpuscles, but the vessels were very much distended by the blood-pigment matter, showing clearly that the engorgement was of long duration or chronic in nature.

"'The walls of all the veins were thickened and their

course was quite tortuous, as we commonly see in varicose conditions (Fig. 23, *d*). The walls of the arteries were very much thickened; in some the lumen was contracted (Fig. 23, *e*), in others it was expanded (Fig. 24, *b*). This condition would naturally cause an irregular pressure to be maintained in the capillaries, and act as an element in producing the capillary engorgement (Fig. 24, *c*), which, together with the chronic congestion of the veins, explains the stagnation and pigmentary degeneration in the capillaries. The sections were made by Dr. Crowell, and the drawings made from them by Dr.

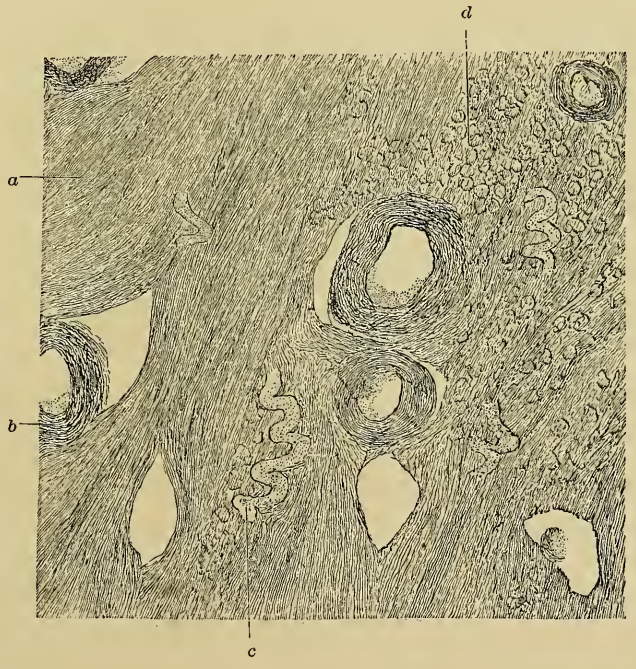

FIG. 24.

George G. Van Schaick represent very accurately the great capillary congestion and thickening of the blood-vessels."

The symptoms are not clearly defined, perhaps I should say they have not been thoroughly studied, owing to the fact that uncomplicated cases are rare. There are very often other affections of the pelvic and abdominal organs pres-

ent which cause suffering, and hence certain symptoms. Pelvic pain of a dull, aching character, which becomes more severe the longer the patient maintains the upright position and is relieved by lying down, is the most prominent symptom. A general pelvic and rectal (sometimes vesical) tenesmus accompanies the pain and is similarly influenced by the position of the patient. The symptoms of other affections which may be present—such as ovaritis, rectal hæmorrhoids, or old pelvic adhesions—are characteristic of such disorders and indicate their presence.

Some help is found, in complicated cases, in observing that any of the pelvic diseases which may be present are aggravated by the varicose veins. For example, ovaritis gives rise to characteristic ovarian pain, which is slightly modified by position, but is greatly increased by the presence of varicose veins. So it is in any uterine disease.

The physical signs are the most valuable aids to diagnosis. Bimanual examination reveals a fullness in the broad ligaments, distinguished from the results of inflammation by being not acutely tender, but doughy, elastic, and fluctuating so far as changing place by pressure. The most characteristic sign is the change in volume by altering the patient's position. If a bimanual examination should be made in the erect posture, both by vagina and rectum, and then in the exaggerated Trendelenburg, the difference in volume of the veins is easily noted.

The diagnosis is made by excluding hydrosalpinx, small cystic ovaries, prolapsed intestines, and omentum. The distended tubes and cystic ovaries are, as a rule, more tender and are not changed by change of position of the patient, and pressure does not dispel the mass. The prolapsed abdominal viscera can be raised up and out of the pelvis and thereby excluded. Varicose veins are frequently mistaken for distended tubes. In my early observations I was led to make this mistake in diagnosis, and others I know have erred in a similar way. One patient, who suffered from chronic ovaritis, was examined by two well-known experts, who made

a diagnosis of diseased tubes and ovaries. In operating I found both ovaries cirrhotic, the tubes were normal, but the veins were greatly enlarged, one or two being large as the middle finger or larger.

Causation.—Age, occupation, and unsuitable clothing predispose to this disease. The latter part of the period of active sexual function is the time when it occurs, and sedentary habits, tight clothing, and maintaining the erect position too long favor this condition. Excessive activity, especially sexual excitation long continued and unsatisfied; subinvolution after miscarriage or confinement at term; and laceration of the levator ani muscle, causing a sagging in the pelvic floor, no doubt, are the most direct and frequent causes. Disease of the pelvic organs often favors this change in the pelvic vessels, but, on the other hand, it is as likely that certain disorders of the uterus and ovaries may be caused by the varicose veins.

Any and all things that favor congestion of the pelvis by interrupting or retarding the return circulation will cause overdistention of the veins. All these influences are referred to in tracing the causes of some of the uterine and ovarian diseases in which congestion is a prominent element. Those less likely to be thought of, and that are not referred to in writings on the subject, are hepatic and intestinal diseases which retard the portal circulation—the same conditions which cause rectal hæmorrhoids. I have observed that general, and to a lesser extent pelvic, peritonitis, in some cases, causes this malady by obstructing the veins in the abdomen or high up in the pelvis.

I have seen this varicose condition of the pelvic veins most frequently in those who had borne children, had been of sedentary habits, or were obliged to stand much of the time, and who had some of the more common uterine disorders.

It would appear, from this, that subinvolution after parturition and unfavorable circumstances of life, or occupation, were the major causes.

Treatment.—The question naturally arises, Does this con-

dition tend to recovery, to increase and give rise to other affections, or to remain a permanent disease which impairs the comfort and usefulness of the individual? The natural history has not yet been fully recorded. In fact, there is not much said about it, and, although I have been investigating the matter for some years, there are many things that I am not sure about. I am inclined to believe, from what I have seen, that after the menopause there is a marked improvement in many, and perhaps recovery in a certain number, but apart from this the affection has no natural tendency toward recovery.

The effective treatment is removal of the veins, the whole plexus, or as much of it as can be. I have operated with very gratifying results, and sufficiently often to commend the surgical treatment, when the suffering is severe enough to call for it.

Dr. Dudley's results in four cases are sufficient to give the operation a merited place in gynecological surgery. There are cases where operation is not urgently indicated, that can be greatly helped by treatment.

First, it is necessary to see that the bowels act promptly and that there is no constriction of the waist. Displacements of the pelvic organs should be corrected. In case the pelvic floor is defective from injuries, it should be restored. Of course, any disease of the pelvic organs which may be present should be treated simultaneously. Astringent douches and the tampon, with boroglyceride, are useful, and a large-rimmed Peaslee ring-pessary gives support to the uterus, and by pressure relieves the pain in certain cases. It should be used after the tampon, and after the patient is able to be about on her feet.

The most valuable part of the whole management is rest, with the pelvis elevated. At night the patient should have the pelvis raised when resting on the back; and while upon the side take Sims's position, only more prone—that is, the upper knee should be placed forward and over the lower until it touches the bed. During the day the Trendelen-

burg position should be taken while resting. So much relief is usually obtained that the patient, when once she has experienced the benefit of it, will be glad to follow out this part of the treatment.

Finally, the use of electricity I commend very highly. The interrupted high-voltage, primary, or mixed current, as introduced into practice by Dr. George J. Engelmann, gives great relief. This peculiar electric current, as used by Dr. Engelmann, has been found by many to relieve pelvic pain, hasten the absorption of inflammatory products, and improve nutrition, and I have found it of great service in quieting the distress caused by varicose veins. I also believe that it contracts the vessels in some degree, or improves the nutrition of their walls, so that they regain their tonicity.

I have used electricity in connection with other means, especially postural treatment, and therefore I can not fairly say how much of the benefit can be credited to the electricity, but am sure that it is a valuable agent in the management of this trouble.

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